

COAL AGE

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Who Are You?

Who are YOU?

You expect the soldiers of the U. S. A. to stand up and be shot if necessary to protect you, your home, your wife and children?

You expect the boys on the battleships to sail into the jaws of death and to brave the hell-fire of enemy guns and the assassin thrust of the sneaking submarine, all to defend you and your neighbors from invasion?

And who are YOU?

What do you expect to do? You? Yourself?

Did you say the other day that you didn't think you'd put your money in a Liberty Bond because you could beat that; you could invest your funds at 6 and 10 per cent., and you didn't see why you should purchase Government paper that only pays three and a half?

Did YOU say that?

When your country asks you to advance a measly fifty or a hundred dollars to help keep the edifice of civilization from tumbling, do you prate of making more by lending elsewhere?

Say, what kind of a fellow ARE you?

Do you want other men to sacrifice their business, their prospects and positions, and go to marching, drilling, and by and by starving, suffering from wounds, dying, while you don't turn your hand over to help?

WHAT are you?

Do you mean to say you'll not buy all the Liberty Bonds you can afford, that you'll not come gladly, willingly, up to the scratch and put your name down as a financial backer of Uncle Sam to the extent of your ability?

Who are YOU, that you should hem and haw when others salute the flag with a blithe smile and step forth to die?

There are shadowed homes aplenty now in France and England, and from all appearances there will be others in this land before this horror is over. Those tears shed are honorable tears.

Though mothers mourn their first-born and fathers bow their heads because their hopes that clustered around the bright, fine boy have been extinguished; though wives and sweethearts are desolate, yet underneath it all they're proud, there's a little spot of joy to know the boy died for his country, literally sacrificed his life for liberty.

But how about YOU? How will YOU feel, you who wouldn't even obligate yourself for fifty dollars?

Wake up!

Come a-runnin'!

Go right away to your bank and say to the banker:

"Quick! Put me down for a Liberty Bond. Don't let me be disgraced by having this loan pass without my subscription."

— Dr. Frank Crane in *New York Evening Globe*

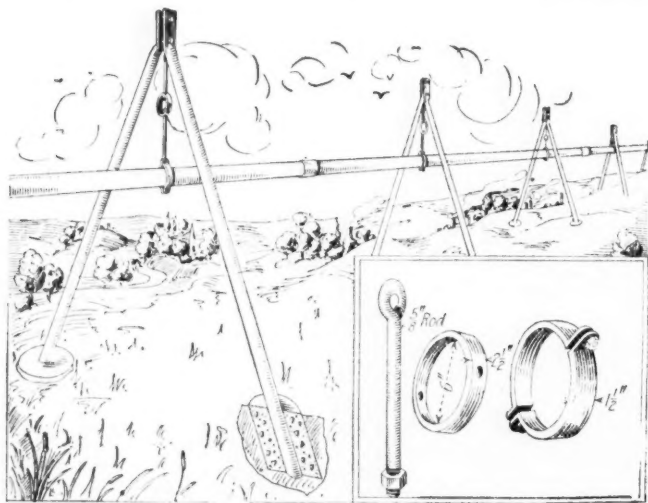
Ideas and Suggestions

This is a time when each and all of us must give the best that is in us. We must find new ways of doing things; we must discover short cuts and establish systems leading to higher efficiency. In fact, we must do more work with fewer men and do it in less time. Hundreds of coal-mining men have perfected devices and installed methods that hundreds of other mining men would like to know about. These two pages are the best place to make such information public, and that is one way we can help win the fight we have on our hands. Send us a good idea or suggestion today.—Editor.

A Useful Type of Pipe Hanger

A type of pipe hanger devised at the shops of the Low Moor Iron Co. of Virginia has proved very successful. The construction is simple, cheap, substantial and efficient. The details of a typical installation for a 6-in. pipe are shown in the accompanying sketch. The dimensions can be altered for other sizes of pipe, says Raymond B. Ladoo in the *Engineering and Mining Journal*.

The two legs are made from old 3-in. wrought-iron pipe or boiler tubes cut in 8- to 15-ft. sections depending on slope of ground. One end of each pipe is flattened for a distance of about 8 in. and the flattened portion drilled for $\frac{1}{2}$ -in. bolts. Two $\frac{5}{8}$ -in. rods about one foot long are bent into an eye at one end to admit a $\frac{1}{2}$ -in. bolt, and threaded at the other end. A ring, 6 or 7 in. in diameter, $2\frac{1}{2}$ in. wide and $\frac{3}{8}$ in. thick is then bored to admit loosely the $\frac{5}{8}$ -in. rods, the two holes placed diametrically oppo-



LOW MOOR TYPE OF PIPE HANGER

site each other. This ring can either be made of strap iron bent and welded, or cut from 6- or 7-in. pipe or couplings. The pipe ring is held by two straps about $1\frac{1}{2}$ in. wide and $\frac{1}{4}$ or $\frac{3}{8}$ in. thick. Each is bent in a semicircle, and the ends are flattened and bored to receive $\frac{1}{2}$ -in. bolts.

The manner of assembling the hanger is evident from the sketch.

The purpose of the 6-in. ring is to allow the pipe to swing free from its support in any direction. This provides for expansion and contraction in the line and prevents the force of wind sway from shaking the hangers. By using long threads on the rods the pipe may be leveled up by tightening or loosening the nuts. The legs are embedded in concrete piers about 1 ft. square and 2 ft. deep and given a spread of about 6 ft. Hangers of this size are spaced on about 25-ft. centers.

Hangers of this type have been in use here for several years and have proved very satisfactory. The one used as an example is one of a series supporting a 6-in. compressed air line about a quarter mile long. Most of the material used, with the exception of the concrete, was scrap and consequently cost but little. The advantages of this type of construction are low cost, durability, flexibility and ease of installation.

Safety in Shooting Coal

BY A. F. DICKSON*

The safest method of shooting machine-mined coal, especially where the slate has a tendency to draw or break away from the roof when the shot is fired, which is the prevailing tendency in a pitching seam, is to fire three shots when the coal being worked is in the ordinary room. Before shooting, all bug dust should be removed from under the cut, so that the coal will not bank itself when the shot is fired. If the bands are loose, they should be removed before attempting to shoot.

The first hole should be placed near the center of the cut and drilled at a slight angle, to enable powder to work on the largest area possible. This first shot generally displaces enough coal to permit the miner to load from three to seven cars without any danger from the slate and, as is often the case, part of the slate will fall with the coal, as the large area worked on by the powder gives it ample opportunity to do so. If it does not fall, it can be approached by the miner with little danger, and may be barred or wedged down without much trouble. The two butt shots having an open end, little powder will be required to shoot them. The slate is brought down with the coal, thereby leaving the miner practically safe.

On the other hand, the prevailing method of shooting machine-mined coal—that is, shooting the cut in two shots, or the tight shot on the rib—tends to very dangerous conditions for the miner to work under. The dangers arising from this method of shooting, which are evident to any one who will stop and consider, are as follows: The miner shoots first on the rib, in order to allow his powder to work satisfactorily on the coal. He drills from 6 to 18 in. away from the rib. This in itself leaves the rib in a dangerous condition, for when the room is driven past, the weight of the overlying strata squeezes the coal and slate on the rib, leaving it in imminent danger of falling and catching some one.

*Roscoe, Penn.

After having shot the coal on the rib, the miner is in constant danger, both from coal and slate, as the coal has only 4 or 5 in. to fall. The miner has to shear and dig out the coal the best he can and, after loading a few cars, the danger of both the loose coal and drawslate being catapulted onto him increases. If he braces the already loose slate with a post, the braces only act as traps, as the moment enough coal is loaded out he is caught by the fall.

The danger could and should be reduced to a minimum by enforcing proper precautions in shooting the coal. If it is left to the miner, he will, in most cases, shoot on the rib first, because it means one less hole for him to drill, although no more powder is required to shoot three holes than to shoot two. In mining as in other things, custom must make way for safety and efficiency.

Value of Keeping Proper Data

BY CANADIAN ENGINEER

The following incident, which occurred at one of the mines with which I am acquainted, illustrates the necessity of keeping proper track of data and also shows the difficulty of blocking off an unexpected inrush of water. The particular instance has to do with the loss of the exact position of an old bore hole.

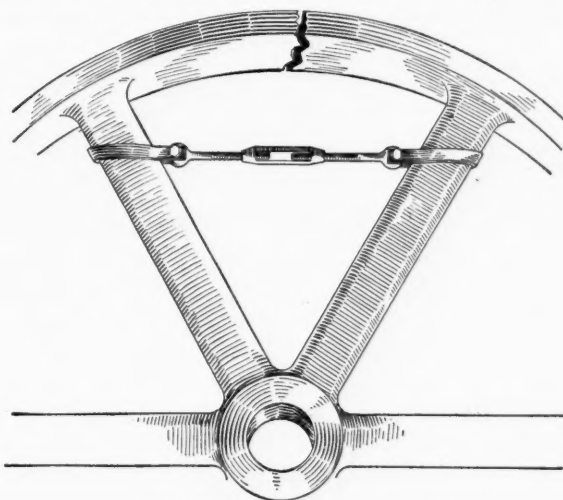
The field in question contained two seams of coal, 60 ft. apart, only the lower one of which was worked. When the operator took over the area it was stipulated that the owner would first bore it, as it was supposed to be in line with a prominent fault that appeared in surrounding leaseholds. About ten bores in all were put down, mostly on the outskirts of the property away from the shaft positions. No record of the exact location of these bores was kept, although the borers' sheet, which gave the position approximately, was preserved.

Some years later when the mine was under different management, the underground workings approached one of these bores. The first indication of the presence of the bore was a burst of coal from the face, followed by a steady flow of water that streamed into the dip workings. This coal was cleared away and an attempt made to block the hole from below. This proved impracticable, as the water tended to flow through the strata immediately overlying the seam and burst out in other rooms and places of the mine. Old plans and records were hurriedly consulted, and while the approximate position of the bore was found, no one could locate it on the surface.

Finally, the old manager of the mine, hearing of the trouble, came on the scene; and he was able, after a little searching round, to locate the bore upon the surface. Tools and a boring rig were obtained as rapidly as possible, and the hole bored afresh, so as to get it thoroughly cleaned, after which it was plugged with cement. But meantime, owing to the time lost in getting at the work and the seat of the trouble, the workings to the dip of the entrance of the water had filled up, and a new pumping plant had to be bought to cope with the difficulty. All this because the position of the bore holes were not accurately marked on a reliable plan and arrangements made underground to leave a suitable small pillar as a protection against accidents. Another interesting fact was learned in addition. The bore hole, a chisel-drilled hole, had deviated a distance of 40 ft. in the depth drilled. An accurate survey disclosed this fact.

Emergency Pulley Repair

During some changes and additions to our power plant a pipe fitting was accidentally dropped on an iron pulley that drove a low-pressure air fan, making a crack across the face midway between two of the spokes. As



CLAMPS ON CRACKED PULLEY

it was a special-diameter pulley (about $31\frac{1}{2}$ in.), it could not be readily duplicated. The pulley was strengthened by making up a couple of clamps, which were fitted about the two arms adjacent to the crack and then drawn tight by means of a turnbuckle which drew the broken rim tightly together in its former position. Before drawing the break together, we wiped the inside of the crack with sal ammoniac to get the benefit of any rusting action. The pulley was put in operation a few days later and has seen everyday service since, says M. A. Saller in *Power*.

COLLIERY NOTES

The Full Roof Settlement in Longwall Workings is only reached a half mile or three-quarters of a mile back of the working face. Only outby that point should preserved timber be used.—W. H. Hepplewhite, at a meeting of the Midland Counties Institution of Engineers, Nottingham, England.

When Pointing Mine Props so that they will accommodate their length to the subsidence of the roof and still remain intact and thus support the draw slate, according to W. H. Hepplewhite, they should not be "pencil pointed," but cut into a chisel point. The prop then bends at the point and does not break in the body of the prop. A "cap-piece" is placed under the chisel point where the floor is soft.

All Decayed Timbers Should Be Removed from the Mine so that they will not spread their disease. Some mine fungi spread on the surfaces of timbers while others strike at its heart. One species, the *Polyporus Vaillantii*, has been found to spread its mycelium in a month over a space of 9 in., even under laboratory conditions. This mycelium should be scraped off with a knife, and the timber washed with copper sulphate. The fungus which strikes its mycelium inward is harder to combat, and may often not be even suspected.—I. Mitchell, at a meeting of the Midland Institute of Mining, Civil and Mechanical Engineers.

A Blind-Pit or Staple-Shaft Was Driven Upward at the Warncliffe Silkstone Colliery, England. The method was that of shrinkage stoping or full battery, the men reaching their work and being provided with air by two vertical boxes 33x27 in. on the inside, carried up as excavation proceeded. The upraise was extended only 60 ft. The material was not drawn out by a chute, but the excess material, till construction was finished, was thrown down the box airways just described. A circular brickwall was built up as the shaft was upraised.—G. B. Walker, at a meeting of the Midland Institute of Mining, Civil and Mechanical Engineers, at Doncaster, England.

Double-Range System of Speed Control for Adjustable-Speed Induction Motors

By F. B. CROSBY*

SYNOPSIS—Facilities for controlling or varying the speed of mine fans are highly advantageous from many standpoints. In the past this speed variation could not be attained easily with alternating current. A means whereby this control may be secured without undue complication is here described.

In a previous article¹ the selection of the most suitable type of electric motor for mine-fan drive was discussed, with particular reference to the character of the application and the relative advantages of single-speed, multi-speed or variable-speed motors for each general class of service. It was noted that for fixed resistance of airways, pressure or volumetric conditions, commonly found in railroad tunnels, subways, ventilating systems for large buildings and occasional nongaseous mines, the constant-speed squirrel-cage induction motor offers the simplest and most efficient drive.

In a large number of coal mines facility of air control is desirable, to meet increased demands caused by variations in mine resistance due to increased number and length of drifts or to caving; bad gas pockets; smoke after a fire; to comply with laws requiring a definite amount of air per man in case market conditions suddenly warrant increased production; and finally, to secure the greatest power economy during idle periods, nights, Sundays or holidays. The polyphase brush-shifting variable-speed motor was described and mention made of the type PCR polyphase speed-regulating set.

The following description of the double-range system of adjustable speed control for mine fans, centrifugal pumps, main roll drives in steel mills, etc., deals with the auxiliary regulating sets, automatic control and their electrical characteristics.

The driving motor is of the induction type, with three-phase distributed windings in both stator and rotor. The general design conforms in every respect to the usual rugged construction characteristic of standard motors of this type. Mechanically and electrically the driving motor is a self-contained unit independent of the auxiliary regulating equipment. The regulating set consists of two units mounted on a common base. The driving motor operates equally well as a simple single-speed machine without the regulating set in service.

Reference to the simple diagram in Fig. 1, and to Fig. 2, which shows the testing of a large equipment designed for steel-mill service, will assist in following this explanation of the operation of the system.

Referring to Fig. 2, *A* is the main roll motor, and *B*, *C* and *D* is the regulating set. *B* is a polyphase commutator regulating motor receiving the secondary or slip-ring energy of the main motor *A* at a frequency and voltage dependent upon the speed at which the latter happens to be running at any given instant. *C* is an

ordinary squirrel-cage induction motor with its primary winding connected to the alternating-current system supplying the main motor *A*. *D* is a polyphase exciter for *B* and electrically is practically a duplicate of *B*, except for capacity. *D* receives its excitation from the slip rings of *A*. In the more recent equipments the exciter *D* is replaced by a suitably designed stationary exciting transformer. A shop generator is temporarily connected to the motor *A*, to load it during the test.

A small auxiliary winding with slip rings and commutator, similar to an ordinary rotary converter armature, is mounted on a sleeve (not shown in Fig. 2) on the shaft of the main motor *A*.

To understand the operation of this system of control, four points must be emphasized and kept clearly in mind:

First, the speed-torque and speed-current curves of any induction motor are practically identical when the machine is functioning as a normal motor below synchronous speed, and when driven above synchronism from some external source of mechanical power while still having its primary winding excited by normal po-

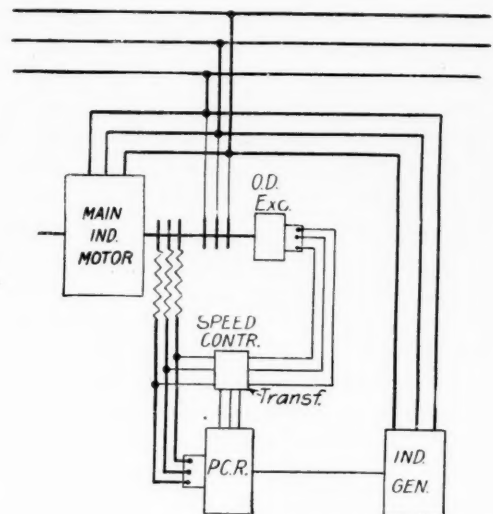


FIG. 1. DIAGRAM OF CONNECTIONS FOR DOUBLE-RANGE REGULATING SET

tential and frequency. Below synchronism there is a transformation of electrical to mechanical energy; above synchronism the transformation is from mechanical to electrical energy. On passing through synchronism, the motor automatically becomes an asynchronous induction generator, delivering practically the same electrical output at a given speed above synchronism, or mechanical output at corresponding slip below synchronism.

Second, the secondary or slip energy of an induction motor is always equal to $\frac{s}{1-s} \times Hp.$ at the shaft, when *s* is the slip expressed in per cent. of synchronous speed. The capacity of the auxiliary regulating equipment is therefore proportional to the maximum departure from synchronism either above or below.

Third, any induction motor may be considered as a crude static transformer. With a phase-wound rotor

*Schenectady, N. Y.

¹"Coal Age," Sept. 4, 1915.

locked so it can not turn, and with normal frequency and voltage impressed on the stator windings, the same frequency, and a voltage depending upon the ratio of primary to secondary windings, will appear at the slip rings. If now, the motor is left free to revolve, it will accelerate, due to the torque developed by the current induced in the rotor. As it accelerates the voltage and

points) throughout the entire range specified, including all points at and near synchronism as well as at points more remote both above and below synchronism without sacrificing flexibility, continuity of control, overload capacity or maximum torque values.

From the standpoint of operation, this equipment is most simple. With the main oil switch closed two man-

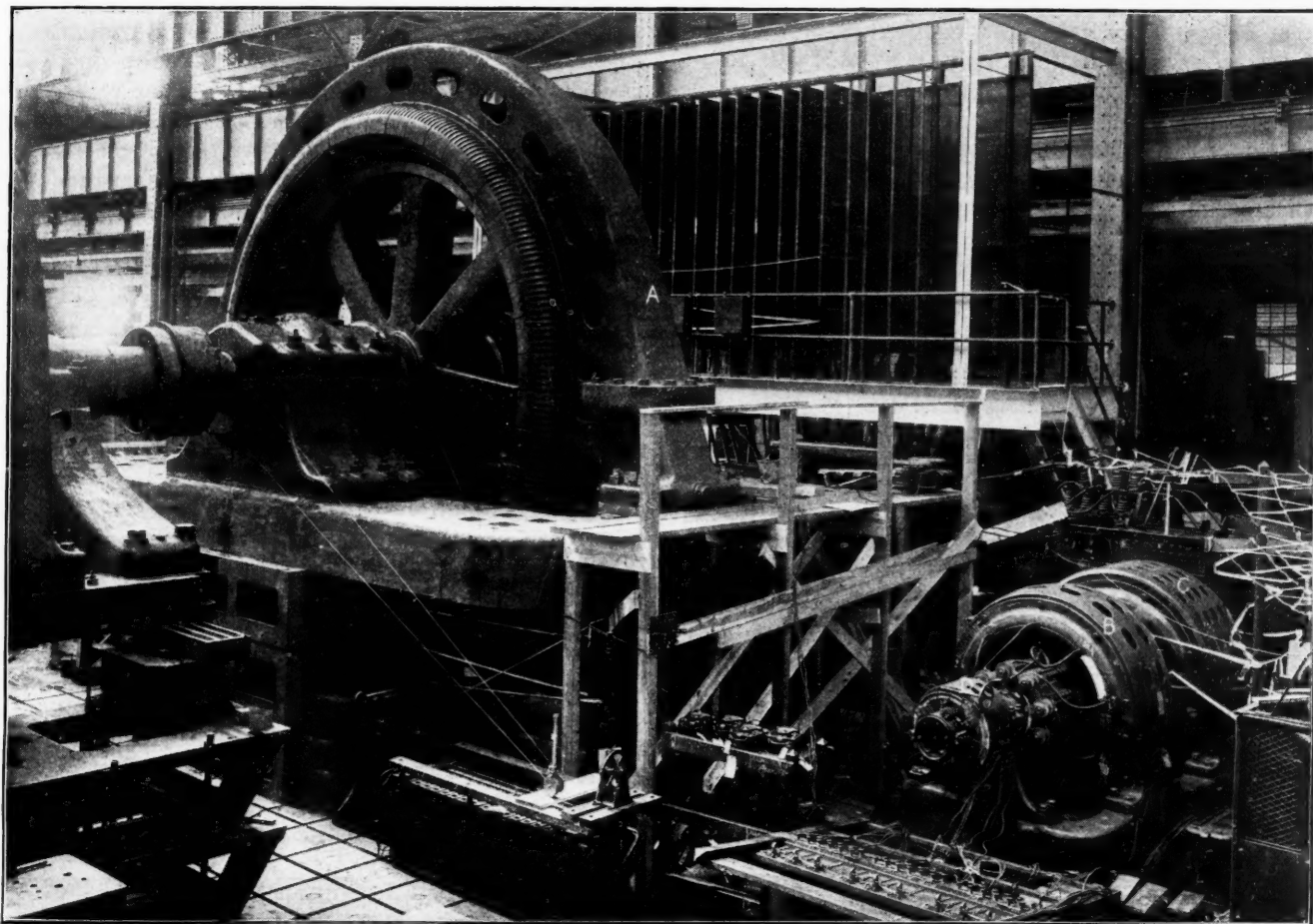


FIG. 2. TESTING A 2000-HP. MOTOR AND REGULATING SET

frequency at the slip rings become less and less, until at exact synchronism both values are zero and no current flows in the rotor. Above synchronism similar conditions obtain, but with reversed phase rotation in the secondary circuits.

Fourth, for every value of slip-ring frequency and voltage, the induction motor has a definite speed point equally distant above or below synchronism.

From the foregoing considerations it is evident that if means are provided for impressing and maintaining any desired voltage, frequency and phase rotation on the secondary of an induction motor, that motor must run at a constant speed corresponding thereto, regardless of variations in load.

It is also evident that this external impressed secondary voltage and frequency must be capable of being varied smoothly from a maximum to zero frequency (which is direct current) at synchronism, and again with reversed phase rotation to a maximum frequency for operation of the main motor above synchronism.

These results are obtained with the speed regulating equipment herein described, by means of the ohmic-drop exciter.

Movement of a single lever-operated rheostat will give continuous speed control (approximately 100 running

ual operations only are required to start: First, close a standard compensator switch, which starts the squirrel-cage unit of the regulating set. Second, throw the master controller to full "on" position, starting the main motor. As the main motor accelerates with current limit, the regulating set goes into commission automatically. For smaller units, a somewhat less expensive and equally satisfactory hand-operated drum controller can be substituted for the automatic magnetic control.

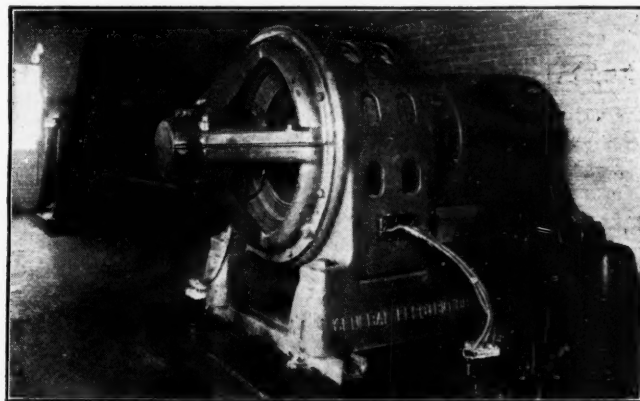


FIG. 3. INDUCTION MOTOR BELTED TO A FAN

The necessary electrical and mechanical interlocks insure the proper sequence of functions of the several pieces of apparatus. A small lever switch on the control panel renders it possible to operate the main motor at will, independently of the regulating set, thus permitting the operation of the motor at maximum efficiency at normal full-load speed.

If the proper speeds are selected, the fan, pump or other device may be driven for long periods by the motor at normal speed, with the auxiliary set held idle in reserve for an emergency requiring higher or lower speeds and pressures.

Assuming the main motor to be carrying any load within its guaranteed capacity and speed range below synchronism, its secondary energy is utilized in the com-

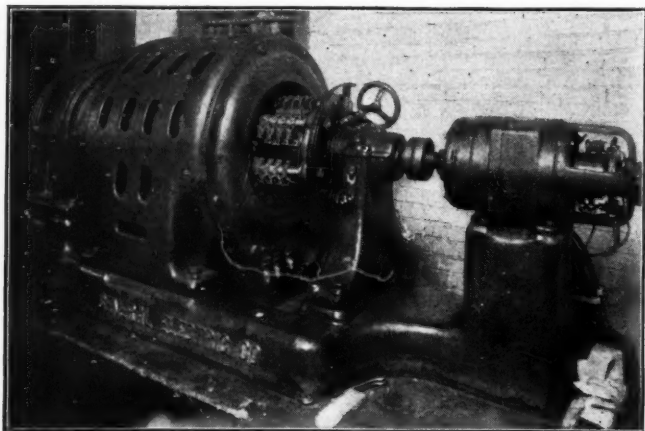


FIG. 4. SPEED-REGULATING SET FOR FAN MOTOR

mutator motor *B* to drive the squirrel-cage unit *C* slightly above its synchronous speed, causing it to operate as an asynchronous induction generator, returning to the supply system the slip energy of the main motor *A* less, of course, the losses in transformation.

As the speed of the main motor approaches synchronism, the frequency in its secondary and also in the exciter and regulating-motor circuits approaches zero or unidirectional current. At synchronism, direct current flows in all these circuits, and the main motor *A* becomes in effect an ordinary synchronous motor with a direct-current field excitation.

This gradual transformation from alternating to direct current and again to alternating current of reversed phase rotation as the ohmic-drop exciter accelerates to and passes through synchronism, is perhaps more readily appreciated if one considers the operation of a standard rotary converter self-starting from the alternating-current side. At standstill, with line frequency impressed on the slip rings, the same frequency appears at properly spaced brushes on the commutator. At synchronism, with line frequency on the slip rings, unidirectional current of zero frequency appears at the commutator brushes.

At any point between standstill and synchronism, it is obvious therefore that the commutator frequency is proportional to the speed. It is also evident that if, instead of relying on the rotary for its own rotative effort, the rotary be externally driven above its normal synchronous speed, the current at the brushes again becomes alternating and with a frequency proportional to the departure from synchronism. The operation of the ohmic-drop exciter is strictly analogous except that for

the motor function of the rotary is substituted the rotative effort of the main motor shaft upon which the ohmic-drop exciter is mounted.

The direct current used for excitation of the main induction motor at synchronism is obtained from the ohmic-drop exciter, by transformation of current at frequency to a frequency proportional to its speed of rotation. It is therefore available automatically when needed; namely, when the main motor is running at synchronism and when, consequently, its slip-ring voltage is zero and therefore cannot be used for self-excitation as is the case at speed points remote from synchronism.

As the main motor passes through synchronism, the frequency of the several circuits mentioned above increases, but with phase rotation reversed. The speed of the regulating set drops slightly below its synchronous speed, and the transfer of energy through the set is reversed. The set is now driven by the squirrel-cage unit *C*, functioning as an ordinary induction motor taking energy from the supply system and transferring it to the slip rings of *A*. When running above synchronism, therefore, energy is fed into both the stator and rotor of the main motor simultaneously.

Two other systems of adjustable-speed control have been tried out with more or less success—namely, the so-called Kraemer rotary converter and the Heyland frequency-changer systems.

Assuming the three types of equipment to be designed on the same basis as regards (1) rated continuous horsepower output at all speeds, (2) maximum torque at all speeds, (3) guaranteed temperature rise and (4) effective operating speed range, the following points are of interest.

After a careful study of the several systems of induction-motor speed regulation already tried out in Eu-

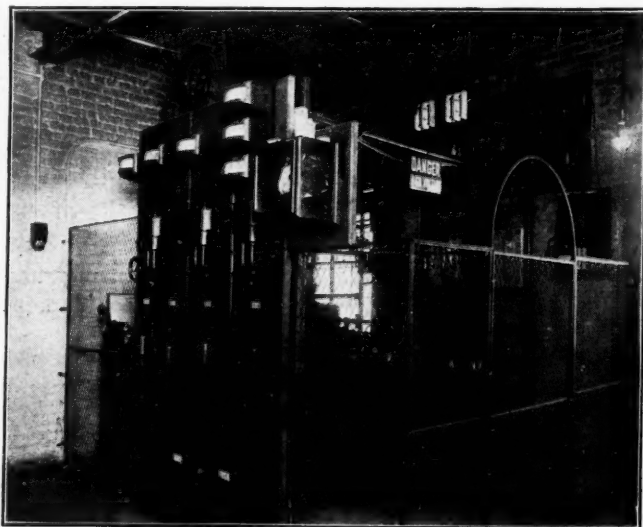


FIG. 5. CONTROL AND FEEDER PANELS FOR FAN MOTOR

rope, the General Electric Co. finally adopted the Scherbius on its merits for all 25-cycle applications and for 60-cycle applications, not demanding in excess of 35 per cent. speed regulation. For 60-cycle service requiring more than 35 per cent. speed regulation, the rotary-converter system was recommended until the double-range system was developed. Under no conditions was the frequency changer recommended, because of inherent deficiencies in its operating characteristics.

Since entering this particular field of motor control the General Electric Co. has taken orders for 45 of these equipments, ranging from 150 to 3000 hp. normal motor capacity and aggregating nearly 50,000 hp. More than half of these have been delivered, all of which are in successful operation. The others are nearing completion.

The double-range system permits the operation of the main motor non-regulating at normal speed and maximum efficiency, thus minimizing wear and upkeep on the auxiliary equipment.

It also permits the use of a standard-design motor with three-phase secondary, standard automatic magnetic contactor control with provision for current-limit acceleration and emergency stopping by reversal of master controller. The induction generator is a strictly standard squirrel-cage motor. Both the main motor and the induction generator may be transferred and used elsewhere at some future time. With the frequency-changer or rotary-converter system all machines and transformers are special as regards windings and voltages.

Two operations only are required to start up, as noted before. The main motor drops into its required speed automatically without the necessity of synchronizing as is the case with either the frequency-changer or rotary.

Any number of running points up to 100 or more can be had with the type PCR control as against seven or eight with the complex six-phase transformer tap method used with the frequency changer. If but six or eight points are required, a simpler system of direct concatenation of two multi-speed motors is preferable to the complex frequency changer.

The frequency-changer system requires an auxiliary direct-current bus system which is expensive to install and renders the operation of the driven device dependent upon the integrity of this direct-current system. More conduits and more floor space are required for the frequency changer and auxiliary control parts than for the PCR and its control.

The frequency-changer type of regulating equipment installed abroad has not been an unqualified success. One of the chief reasons lies in the difficulty of designing a machine to successfully commutate an alternating-current wave with superimposed harmonics. A pure sine wave can be commutated, but such a wave form, after passing through the reactance and inductance of the main motor and speed-changing transformers, becomes distorted, with objectionable results to commutation. The Scherbius patent covers a compensating winding which insures practically perfect commutation for the type PCR regulating set.

The type PCR motor is asynchronous and has no tendency to fall out of step under sudden loads. The frequency changer, on the other hand, is a synchronous device and has the same tendency to fall out of step as has a rotary converter or ordinary synchronous motor.

The type PCR regulating motor has a stator similar to the standard induction motors, consisting of a laminated structure with open slots in which a distributed three-phase winding composed of form-wound, steam-molded coils is held firmly by wooden wedges and suitable end supports.

The rotor has the appearance as well as the electrical and mechanical construction of a standard direct-current armature. A compensating winding in the stator neutralizes the armature reaction and insures excellent commutation characteristics at all loads.

The ohmic-drop exciter, which is the essential means of obtaining continuous speed control at and near synchronism, consists simply of an armature with slip rings and commutator. No stator is used. Alternating current at primary frequency is taken into the slip rings, and current which is automatically alternating or continuous, depending upon the speed of rotation of the main motor on the shaft of which this small armature is mounted, is taken from the brushes at the commutator.

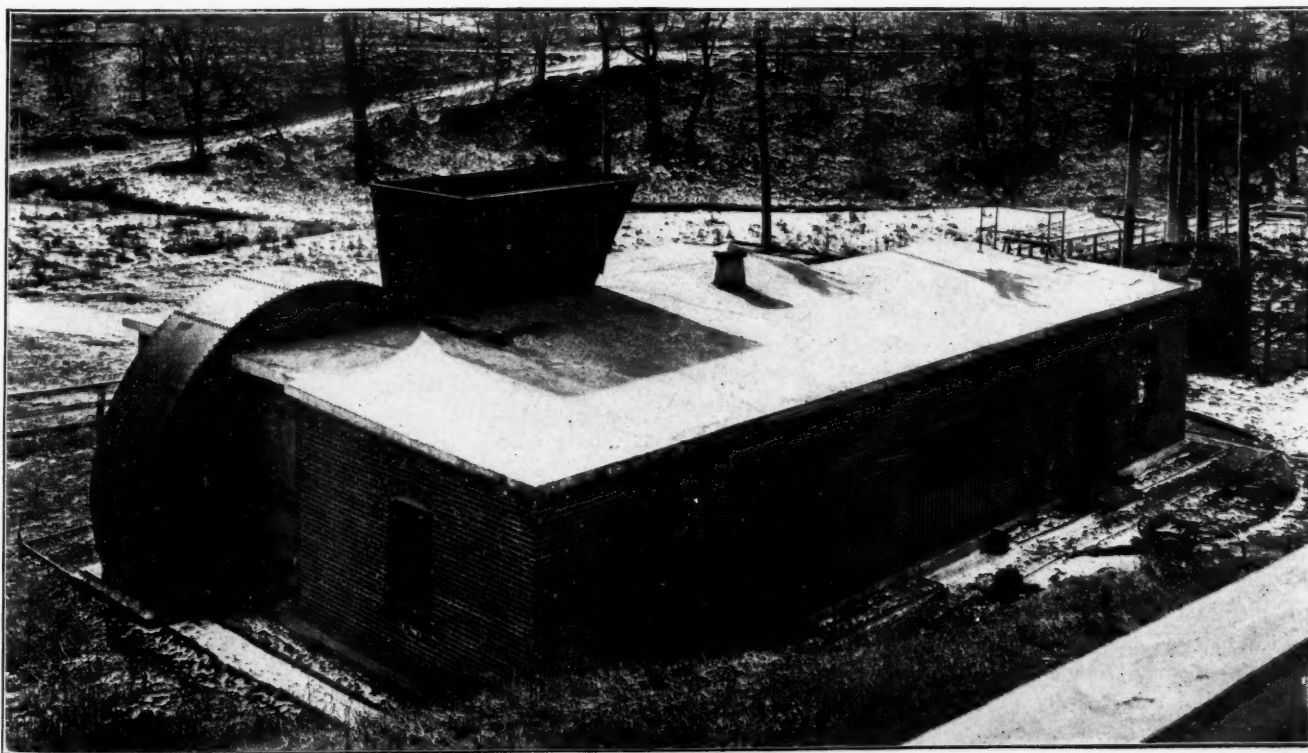


FIG. 6. FAN AND MOTOR HOUSE OF PITTSBURGH COAL CO.

In general, power will be taken from the supply system through disconnecting switches, a suitable triple-pole hand-operated oil switch with overload and low-voltage protective features, and (if reversal is desired) for ward and reverse oil-immersed contactors actuated by a master controller, conveniently located, and thence to the primary winding of the main motor.

From the slip rings, the secondary current passes through a suitable grid starting resistance. This resistance is cut out by means of alternating-current contactors or a suitable drum controller.

With magnetic control, this resistance may be either cut out step by step at the will of the operator or automatically by means of current-limit relays, which prevent the current during acceleration from exceeding an adjustable predetermined value.

The current-limit feature may, in emergency, be temporarily put out of commission by means of a so-called maximum-torque push button, thus permitting the operator to obtain any value of torque at starting, up to the limits of maximum torque for the particular motor in question.

Additional resistance may be included to permit reversal of torque in the main motor while running at full speed forward, for emergency stopping without exceeding 130 per cent. of full-load current. Ample insula-

tion is provided to withstand the induced secondary potential at the instant of reversal. Motors can be brought to rest from full speed in 30 sec. or less.

A switch mounted on the control panel, when opened in emergency, shuts down the entire equipment and renders the master controller ineffective.

One or more push buttons can be conveniently located so as to permit shutting down the equipment independently of the master controller. After such emergency stopping, the motor can be started again only from the master controller.

Fig. 3 shows a 250-hp. induction motor belted to a mine fan. Fig. 4 shows the type PCR speed-regulating set. Fig. 5 is the control panel for this equipment. This is one of seven installed by the Pittsburgh Coal Co. These particular sets are operating on a range below synchronism. In appearance and design they are practically identical with those used for double-range service. Fig. 6 shows a typical fan and motor house erected by the Pittsburgh Coal Co., to house one of these adjustable speed units.

This type of control is applicable to motors of practically any capacity, but in general will be found most advantageous in capacities beyond the present range of type PCR brush-shifting motors—that is, 250 hp. and larger.

Drilling and Shooting Coal

By F. C. PICK*

SYNOPSIS—Twenty years ago miners and mine officials were careless in their use of explosives. They are scarcely less so today. It would appear that much of the danger entailed in the use of explosives underground could be obviated by the employment of a crew of picked men to do all the drilling, loading and shooting.

Twenty years ago, I was sent to investigate conditions in a coal mine where, according to some information (mostly anonymous) that had reached the owners, things were run a little carelessly, to say the least.

I arrived by a late evening train and spent the night at the local hotel. Early in the morning I stepped into the cage with the superintendent, the foreman and three American miners. Acetylene lamps were not, in those days, used in coal mines. We all had flaming oil lamps in our caps. Besides his cap lamp, the superintendent was carrying in his hand a torch in which the oil must have been at least 50 per cent. kerosene. The foreman had a 50-lb. case of dynamite on his shoulder. The three miners had sticks of dynamite in their rubber boots.

I shall never forget the 6-in. flame of the foreman's lamp nearly licking the sides of that box of dynamite, nor the incandescent drops of sputtering oil from the superintendent's torch falling uncomfortably close to the dynamite-loaded boots of the three miners. In the short time it took us to reach the bottom of the shaft I made up my mind that things must be run carelessly, indeed, where the superintendent and foreman showed such ex-

amples of carelessness. I had occasion, in the course of the day, to find out that I was not mistaken.

Some will say: "Well, that was 20 years ago. Things have improved since then." Have they really? In the issue of *Coal Age* for Mar. 18, 1916, we see that a miner was blown up by some coalite he carried in his pockets and that men, in the same mine where this accident occurred, are in the habit of carrying powerful detonators in their carbide flasks. I am familiar with the latter type of men, and they are not all negroes either.

In many mines today, men are seen, daily, filling paper cartridges with black powder, without taking the time to remove the lamps from their caps. In countless mines, men carrying a day's supply of explosives crowd together, each morning, in empty cars hauled by electric locomotives. In numerous operations where permissible powder is used exclusively, the men are in the habit of putting so much of this explosive in every hole they load, that no increase in safety can possibly be derived from the use of an explosive whose advantages over black powder vanish entirely when more than a given weight of it is fired at once. In these same mines, quite often, coal dust is the only thing used for tamping.

I have in mind now a large operation the owners of which take a great deal of pride in the expensive, enameled signs, bearing such words as "Safety First," "Danger," "This Way Out," and so on, scattered profusely in all their mines. However, in every one of these mines, coal dust is the only material used for tamping. This fact is, of course, well known to the superintendent and foremen, but these officials, grossly ignorant of all that relates to permissible explosives, are convinced that the particular brand they employ is so perfect that

*Charleston, W. Va.

it matters little what material is used for tamping or what weight of powder is fired in one hole.

From all this it appears that, so far as care in the handling of explosives is concerned, conditions have improved little, if any, during the last 20 years. Nor are they likely to improve at a faster rate in the near future than in the past, for, no matter what may be said in some quarters, labor is so scarce and independent, that any foreman or superintendent who would be willing to enforce the only kind of discipline capable of remedying the bad practices just mentioned would soon find himself surrounded with such a small number of workers that his employer would lose no time in getting rid of him.

It would be wrong to always blame a foreman for all the more or less extraordinary things happening in his mine. I have yet to meet a foreman who would enforce discipline, no matter how desirable this might be, if, by doing so, he knows he is going to lose his job. Men are scarce now, but they will be much scarcer before again becoming plentiful enough to make discipline practicable.

The idea that discipline is possible without compulsion is a dream. Compulsion, in times of labor scarcity, is not to be thought of. What makes things worse, is the poor quality of our mine labor. I am not disposed to say that conditions, in this respect, are worse than 20 years ago. I have been in contact with the class of so-called old, experienced miners who used to dig our coal and whose disappearance is so much regretted by some of our friends in the mining profession.

MY MEMORY IS GOOD

My recollection of those worthies is very distinct. They were neither more experienced nor more careful than the average miner of the present day. I freely admit, however, that the latter, so far as quality goes, is not an improvement on his predecessors. I am also of the opinion that the immigrants who will seek our shores during the years following the war will not be of a quality such as would make discipline in our mines an easier problem. The industrial countries of Europe, which are the only ones that could supply us with really desirable labor, are not going to let their men emigrate after the war.

I do not mean to say that they will make laws opposing emigration. That will be unnecessary. It is the law of supply and demand that will keep central and western European labor at home, a natural law which no amount of man-made statutes can defeat. Western and central Europe will have to face a tremendous reconstruction problem with its number of working men reduced by the war. Labor will be at a premium, and the workers will find themselves drawing wages as high as those paid in the United States.

This will cause all good men to remain in Europe. People from all the countries bordering on the Mediterranean, for some reasons it would be out of place to set forth here, will probably come to this country, after the war, in greater numbers than at any time in the past. But these people belong to a class of which I have said a word previously. They will not improve the discipline of our mines.

In the light of what I have said regarding labor, the best way, in my opinion, of successfully dealing with the drilling and shooting question is to take the explosives out of the coal loaders' hands altogether, entrusting the

drilling, loading and shooting of all holes to a special crew of picked men. The drilling part of this crew's work had probably best be done while the machine men are cutting the place, in order to make one cable do for both the cutting and drilling machines.

It goes without saying that all drilling would be done by machine. There are on the market several excellent types of coal drills. As to the loading and firing, both could be done immediately after the machine men have left the place, taking away with them the drilling apparatus on the same truck which carries the cutting outfit.

This scheme would not only reduce to a minimum the number of persons handling powder, which in itself is a most desirable feature, but these persons would soon become experts at judging where the holes would be most advantageously placed in the face, how deep they ought to be and with how much powder they ought to be charged. The best blasting results would consequently be secured at a minimum of cost. A maximum of safety would also be attained, because the shooting crew, being composed of picked men, could reasonably be depended upon to inspect the places for gas and dust before firing the shots. Furthermore, since there would be no more holes on the solid and no more overloaded holes, two causes of accidents which have been responsible, in the past, for the killing of countless men, would be eliminated.

The scheme I am advancing has the great advantage over the ordinary shotfirer idea in that the responsibility for the shooting operation is not divided between several men. The boss of the shooting crew is responsible for the position of the holes, their depth and the amount of powder loaded in them. It also devolves upon him to see that the surroundings are safe before he fires the shots.

PRESENT SYSTEM IS UNSATISFACTORY

The ordinary shotfirer's business, often, is to do the firing only. He takes charge of a shot about which all he knows is that it is a hole with some explosive in it, a hole which may have been prepared by an inexperienced or careless miner. The shotfirer has no way of even telling whether the detonator is well placed or not. All he can do is to try to explode the hole; and if he is unsuccessful he will leave it as he found it and go somewhere else. Next morning, the miner who prepared the shot that did not go off will not fail to blame the firer for the lack of results.

In other instances, the shotfirer does the loading of the holes himself, thus assuming a little more responsibility in the shooting operation. He himself judges how much explosive ought to be put in each hole. He can fill part of a hole with tamping material if said hole, being too deep, is partly on the solid. Or, if a hole is entirely in such a position that shooting it might result in an accident, the firer will not load it at all. If, however, a number of holes like this are found and, for safety's sake, the firer omits to shoot them (which is by all means what he should do), not only will there be some rough talk and much kicking next morning, but a reduction in the output as well.

Whether the shotfirer does the firing only or does both the loading and firing, there will always be between him and the loaders a division of responsibility which is bound to create friction. Friction in a coal mine causes a decrease of output and an increase of cost. In this case, it would also tend to decrease the factor of safety,

These drawbacks would be eliminated by including the drilling of the holes among the duties of the shooters' crew and putting the responsibility for the whole undertaking exclusively on the boss of this gang. I do not think there can be any doubt as to this plan being the right one so far as safety is concerned.

The output will also be benefited, for, when a loader reaches his place, he finds the coal shot down, not simply shot in any old way, as is too often the case now, but properly shot and in the best of condition for prompt loading. Expert shooters who know where to place the holes and how much powder to put in them will be able to bring down a cut with a maximum of lump, not lump of extra large size that has to be dislodged with a crowbar and mashed with a sledge hammer, but pieces of the right dimensions that can be loaded with a minimum of effort and a maximum of rapidity.

As to the manner in which the shooters should be paid, it seems that a price per ton would be a good arrangement. This is a detail which I will not touch on now. But whatever is paid the drillers and shooters, an equivalent sum should be taken from the loaders' pay or, rather, a reduction should be made in the price the latter receive at present, in order to balance what is paid the shotfirers. As long as the reduction thus made is not greater than the actual cost of drilling and shooting, plus the powder, the loader will benefit by the change, for there is no doubt that, when intelligently managed, the work of a gang of expert drillers and shooters can be done for less money than would be the case were the same work done by the loaders themselves.

In the editorial "Drilling and Shooting," *Coal Age*, Mar. 4, 1916, mention is made of the danger of breaking

through into another room or entry. Engineering of the proper kind is a sure preventive against such a blunder. If a mining plan is intelligently laid out and all places kept on accurate centers and stopped in time, there will be no such thing as a shot blowing through into another place and causing a dust explosion or any other kind of accident. There is no excuse whatever for such an occurrence.

Byproducts from Coal

The tree which appears below was prepared from one made by W. J. A. Butterfield, of London, England, and presented to a conference on the extension of British trade. It was published in *Coal Age* more than a year ago, and is here reproduced in answer to many inquiries asking for such information. The diagram shows what byproducts can be extracted from coal in the gas industry. The figures have been changed, as long tons and hundred-weights were used in the original table and the gallons used were imperial. Such gallons contain 277.274 cu.in. instead of 231 cu.in., which is the capacity of the American gallon. The imperial gallon is therefore 1.20032 times as large, but as the ton taken by Mr. Butterfield was 1.12 times larger than the short ton the figures were increased by multiplying by 1.07171.

Of course sodium cyanide, yellow prussiate and prussian blue are not direct derivatives from cyanogen. The figures given are those obtained in practice. Theoretically every pound of cyanogen makes 1.88427 lb. of sodium cyanide, 2.3599 lb. of yellow prussiate and 1.96661 lb. of prussian blue.

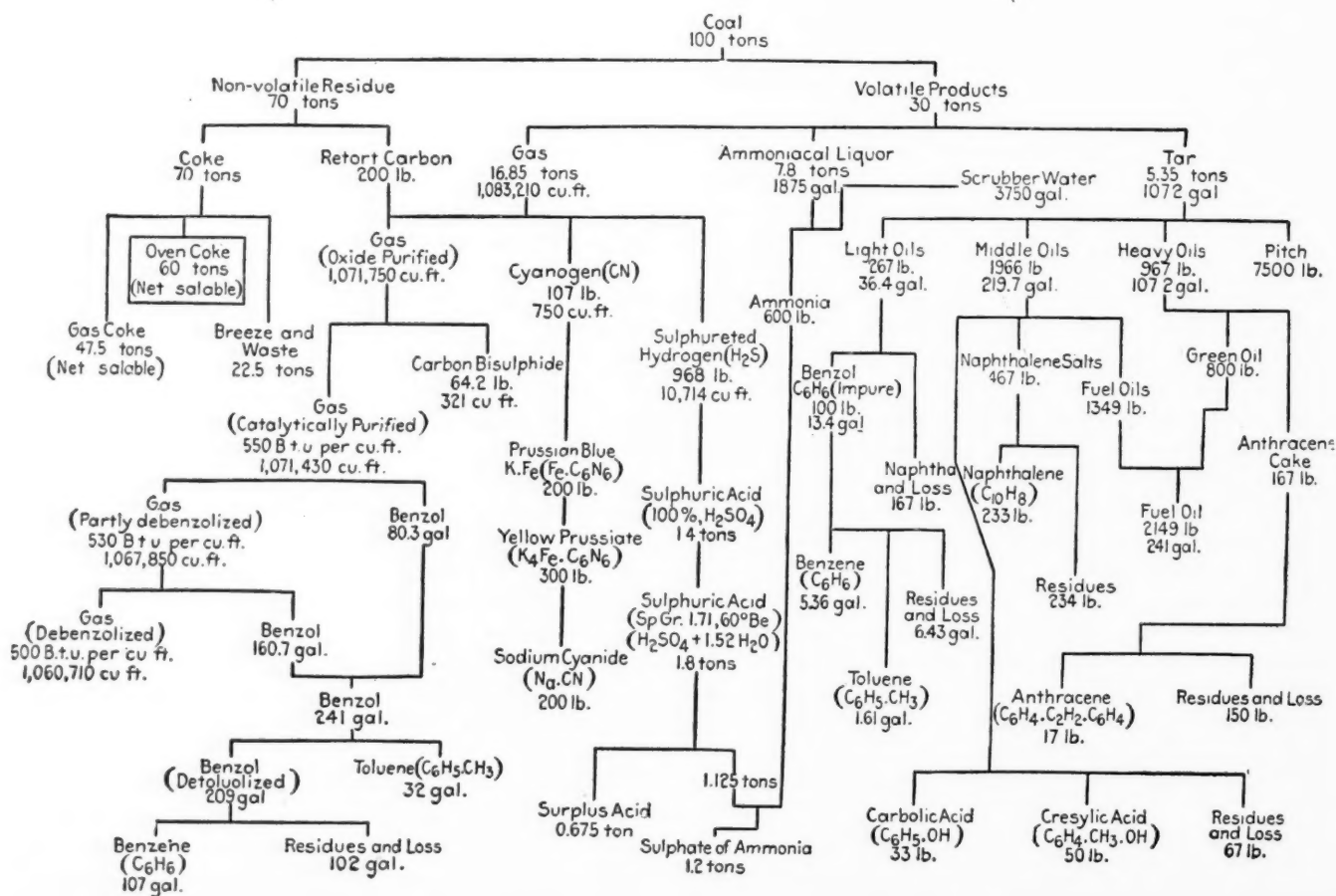


TABLE SHOWING THE VARIOUS BYPRODUCTS OF COAL

Our Part in the War

SYNOPSIS—The editors of more than 100 of the nation's business papers met in Washington in closed conference May 25 and were addressed by members of the President's cabinet and men holding important positions on the advisory commission of the Council of National Defense. The conference was designed to promote the more effective use of the business energies of the country by a closer coöperation of the business press and its readers with the Government. It is impossible to print much of the information there given out in the few pages here available. However, Coal Age readers will be interested in some of the facts stated.

The first speaker on the program was F. S. Peabody, chairman of the Coal Committee. He referred particularly to the aid the Government is rendering civilians who have given up their business, and prompted by patriotic motives have come to Washington to assist in the mobilization of the nation's industries. He said that he was surprised at the lack of red tape and had found that the Government was as direct in its methods and worked with as much efficiency as any of our large corporations. Mr. Peabody stated that the whole Government has been speeded up and that big results are being obtained. He paid tribute to the Department of Labor, and stated that this department has enabled the Committee to send conciliators to handle ugly disputes between coal operators and miners. The Government's plan, according to Mr. Peabody, is to work out the exact cost of production of all necessary supplies, and then to this cost add a reasonable profit. The Government wants to eliminate so-called war profits, but proposes to pay enough for supplies to encourage productive energy.

FOOD SUPPLIES AND FOOD PRICES

Dr. Pearson, president of Iowa State College, and now acting as assistant to Mr. Houston, Secretary of Agriculture, substituted for the Secretary in the latter's absence from Washington. Dr. Pearson said: If the food supply falls off even slightly, it is felt in a marked way, and its reaction is indicated in the prices; on the contrary, when there is a slight excess of food, the bottom of the market may completely go out. The law of supply and demand acts in a somewhat different way in connection with food products, because the demand for food is so inelastic. The fact that prices have doubled does not mean that the supply of food has decreased correspondingly.

Wheat exports previous to the war were running about 100,000,000 bu. per year. In the first year of the war they jumped to about 330,000,000. Since then they have decreased, and last year there were only 175,000,000 bushels. Exports of beef have increased 65 per cent. since the war began.

Now as to the prospects of food production in the immediate future. This year we have a smaller acreage of winter wheat by 31 per cent. than last winter; and, furthermore, the average condition of that wheat for this year is 73 per cent., which is the lowest that has been

reported for many years. In spite of this fact, there is no occasion for alarm. Corn is our king crop. It is as good a food as wheat, and in it we have our safety point.

It is not right that the Southern states should import food to the extent of \$600,000,000 annually when they could raise all they needed. Every railroad car today is needed for transporting products of importance to the war needs.

Labor is the limiting factor in most sections. The Department of Agriculture has entered into a coöperative arrangement with the Department of Labor, and the two organizations coöperating with the railroads have undertaken the moving of labor into sections of the country where it is most needed. Special arrangements are under way for placing on farms many thousands of college and high school students who have had some training along that line. Industrial and business concerns have been asked to encourage their help, especially the farm-raised help, to assist the farmers during the peak of the load. Some employers have agreed to pay the difference in wages between what the farmers can pay and what the men have been earning heretofore.

We are wasting food. It is conservatively estimated that the value of the waste of food from American homes is not less than \$700,000,000 per year; 2c. per capita per day. A slice of bread per home per day wasted means a million and a half barrels of flour in this country every year. The amount of butter wasted in our homes—one sixty-fourth of a pound a day wasted in each home—represents the production of two million cows a year.

SECRETARY REDFIELD TELLS HOW VITAL PROBLEMS ARE BEING SOLVED

Mr. Redfield, Secretary of the Interior, in his talk to the editors said: One of the amazing things about the American people is their ability to let things of importance go by unseen. Dozens of food articles that are used in other countries by millions of tons we do not utilize. Few Americans ever heard of the tile fish up until a year ago. It is now selling over a million pounds a month. Grey fish, which was first placed on our markets last year, is now selling in 30 states.

In introducing such new food we first make a chemical analysis; we then try the food on people who are willing. Next we make a contract with dealers to put the article on the market at a reasonable price. Next we get out a cookbook, telling how to cook the article and then put a good salesman on the road to introduce it. Speaking of fish, not many people realize that it is possible to make an acre of water on a farm equal in value to an acre of land in food. The Government will furnish the farmers the necessary fish for their ponds. All we require is that they tell us how things work out.

Getting back to the war, I hope that no one believes that it is going to be either short or bloodless. We propose to look at it as if we stood alone against our antagonists, and that means sacrifices for us all. Ten sons of cabinet officers are on the job now in either the army or navy; we have tried to do our share. As for money, the \$7,000,000,000 loan may have to be repeated once and again. Two million men may not be enough; we must make the world safe for freedom.

Our Bureau of Standards is working on the problems that underlie this war. A year ago all the optical glass of the world was German made; every navy was dependent upon Germany for her optical glass. We have been studying the problem for nearly three years. It took one year to determine what particular composition was necessary for the pot in which the glass was to be made; it took a second year to determine what particular kind of mixture was necessary for the glass itself; more months were required to learn the technique of the process. However, today we are making glass as good as any ever produced, and we are rapidly adding to our manufacturing equipment. Hundreds of other problems are being solved in the same way by Uncle Sam.

SOLVING THE PROBLEM OF DYESTUFFS

We now make our own dyestuffs; we finish, dress and dye our own sealskins, in fact we are today the largest producers of these goods in the world. We used to produce them in Alaska, ship them to Europe, and then ship them back here. We never thought of making our own potash until our supplies from Germany were cut off. Today, however, we are making potash from kelp—an article whose only seeming value was to trip us up when we went bathing at the seashore.

We have today 375 young scientific men at work on problems which underlie our industries. They are developing the cameras which our aeroplanes will use to map, at a flash, the country underneath. I think you know how those things are done; they take a square photograph through the bottom of the aeroplane, and then you can take those photographs, after they are developed, and impose them upon the topographical map of the country, and see, in addition to the topography, just what is going on there. It is a fascinating science, and in one day recently the English aeroplanists alone took seventeen hundred photographs of that kind. Now, that is where your optical glass comes in. If we did not have the glass, where could we get the cameras?

GERMAN PROPAGANDA IN AUSTRALIA

The Bureau of Foreign and Domestic Commerce in our Department is that which looks after the development of our foreign trade, and it has its men all over the world. We have only recently sent a new attache to Japan, and we have today a very good man permanently located in Australia, for the purpose of counteracting a peculiar brand of propaganda against American commerce. Under German auspices, for several years past great quantities of American newspapers containing editorials hostile to Great Britain have been circulated by German means and German agents in Australia, the object being to injure the American export trade in Australia, by showing the Australians that the United States is bitterly hostile to Great Britain, and, therefore, unfriendly to Australia. Do you get the thought? It was supposed that, of course, after the war Great Britain would get a considerable proportion of the Australian trade, normally, but it was hoped in this way that America might not get the rest, and that Germany might.

Certain important bills are now being introduced in Congress and you can do a great service as editors and publishers, if you will make it clear that nothing extreme is planned or proposed; that powers which have to exist, in order to do anything, are powers which also, as you

read them, might well be abused, if one were determined to be evil; but I think I can give you certain actual illustrations of what is intended in the way of limiting exports, which will show you the purpose clearly.

COAL SOLD TO GERMAN RAIDERS

For example, there is in South America a country friendly to us and also friendly to a German coal concern. That coal concern has been selling coal in the past to German raiders in the South Atlantic. Now, under the present law there is nothing to prevent them buying coal in Boston, Norfolk, or New York, and shipping it there, and selling it to the German raiders, to prey upon our commerce. Under a new act it would be necessary to get a license to ship coal to that concern.

Now, the matter of tin cans is a serious problem. I think we have it solved, although it was somewhat disturbing to have a gentleman from Canada come into my office one afternoon, after hours, with a request for fifty million cans for the month of July, and twelve million a month for the rest of the year, in order that the English army might have pork and beans; 122 million cans for pork and beans alone for the British and Canadian armies in seven months!

Under the new exports limitation act, we would say to anybody who was about to ship tin plate to China or elsewhere, "Just hold off for sixty days, and give us a chance to catch up with cans that we need for our own food." In other words, we could guide it. Now we cannot guide it.

NEUTRALS AID ENEMY

Ferro-manganese, as you know, is vital to our steel industry. I tell you that there is not sufficient of it in the world, and we have got to get it from some other source than from ferro-manganese. A few days ago, in perfectly good faith and without the faintest criticism, I found an order for thirty tons of ferro-manganese that was going to Norway. Now, stop and think a minute. That is a vital thing to the continuance of our steel industry, and you know what the price is; over \$400 a ton; something like that now. Now, we ought not to ship thirty tons of ferro-manganese; we ought to say to the man, "My good friend, your patriotic duty to your country requires that you keep that at home, forego your profit, and let Norway get ferro-manganese from Spain or somewhere else." But I have pleasure in telling you that the gentleman saw the point himself and voluntarily withdrew the shipment.

There has not been the faintest kick from any business man, to my knowledge, when he has been brought squarely face to face, and told just what the facts are, and what his duty is; they have all accepted it willingly and cheerfully. The business hog has been conspicuous by his absence. I want to say that to you, and I want you to repeat it.

VANDERLIP DISCUSSES WAR FINANCING

The next speaker was Frank A. Vanderlip, president of the National City Bank of New York, the largest bank in the world. Mr. Vanderlip said:

We have got to organize this nation for a new business—the business of war—and the business of war is no longer merely the business of soldiers, the business of fighting in the trenches; it is the business of the

organization of all the industrial powers of the nation. We do not have to wear khaki; we are all in this fight, and our success is going to be measured by the completeness of the national organization, by the devotion of the whole people to this one business of war—not to their business as it used to be, but to their business as it is today, because their business is war.

We are facing the biggest financial operation that was ever undertaken. The Government has authorized the issuance of seven billion dollars of securities. Now, you do not know what seven billion dollars means, I do not believe—I know I do not, and I have tried to think of it a great deal. It is the largest sum that we have ever had to attempt to think of, concretely. All the money in all the savings banks of the country is five billion dollars. All the stocks of all the railroads in the country are eight billion. All the money in all the bank vaults of the country is less than two billion dollars—less than the amount that we have got to raise right now. Now, get clearly in your minds that everything that you and your forefathers have saved is now in fixed forms of wealth; it is in the farms and the railroad and the factories. If there should be any great amount of calling of deposits from the banks, we would be in trouble; we would have contraction; we would have efforts on the part of the banks to liquidate their investments. Now, we cannot invest this money over again which we have once invested. There has got to be another plan.

THIS WAR MUST BE FOUGHT ON THE SAVINGS OF THE FUTURE

We have got to recognize that this war must be fought not on the savings of the past, but the savings of the future; but the savings of the future are in the future, and we want money now. Well, the answer to that difficulty is an expansion of banking credit. That is the way this loan is going to be placed. You see examples of that in the action of a manufacturer who says he will take a million dollars of bonds and carry them for his employees, and let them pay in monthly instalments, and he goes to his bank and borrows on those bonds. Now, there is a typical example of how war must be financed, and exactly the same principle applies to the millionaire that applies to the wage earner; he must borrow in advance of his savings, and liquidate his loan as his savings accumulate; and the richest man in the country ought to be the largest borrower, and everybody ought to borrow according to their ability to liquidate the loan.

That is the whole philosophy of financing a war; you finance it out of the savings of the future. The savings of the past have been invested. To anticipate the savings of the future you expand bank credits, and that is the course I believe that we are going to pursue; we are going to see an expansion of bank credits about equal to the loans that will have to be floated. Then we will see a gradual liquidation of those loans, as the savings of the future accumulate. We have got a more difficult job, in one way, than England had. We are absolutely self-contained now, financially; there is no place to go. Whatever is done, we must do.

England had a billion and a half loaned on farm bills, that normally and naturally mature; she sold two billions of securities to America. There were outside resources.

There are none with us, because we are now the court of last resort, financially speaking. So whatever is done here must be done by anticipating the savings of the future, and creating bank credits in the meantime to take their place.

ECONOMIZE AND LEARN LESSON OF THRIFT

Now, that indicates that people must borrow, but the borrower must repay, and there is going to be a great lesson for America—a lesson of thrift; the lesson we needed, perhaps, as much as anything else. We had come to be a nation of reckless spenders. We had been enjoying great prosperity and what came easy was going easy. We are going to see now that we must economize; that we must have savings for the future if we are to liquidate this indebtedness that will be created by this war. That is going to be a lesson of tremendous importance to the whole nation. If we can interest millions of people—and it ought to be millions—in this loan—if we can make them anticipate their future savings, and help them contract habits of thrift, if we can teach them something of investments through this, we will have opened perpetual springs of wealth that will yield as much to this country almost yearly as we will pay in the expenses of this war.

But economy strikes a chill to people; they say, "That is going to ruin business; if men are going to buy as little as possible, business is going to be bad." Not at all. Business is going to be different, and is going to be more active than you have ever seen; but it is going to be a business of necessities. You cannot give this Government seven billion dollars of purchasing power and expect to have as much purchasing power left yourselves as you had before. You are doing an absolutely unpatriotic thing when you spend money on an unnecessary thing; and that is true, no matter how much money you have in the bank, or how easy it is for you to make the expenditure.

We are going to see the most intense period of industrial activity that was ever known; it will not be 100 per cent.; it will be 125 per cent.; they will be employing women and youths, and they will be employing unskilled men for more highly skilled work, and there will be that expansion and development that we have seen in European nations, and we will have the most intense activity and the greatest wage scale that we have ever known; but it will be a different kind of business.

THERE WILL BE EMPLOYMENT FOR ALL

It must not be a business of unnecessaries or of luxuries; it must be a business of war. That must be in the thoughts of the people. "But," you say, "this will throw people out of employment, dislocate industry, disorganize commerce." Yes, it will. War is not tiddlywinks; it is serious business, and you cannot have war without some worry. But that is not a reason for serious worry; you are not going to throw any person out of one job into unemployment; you will throw them out of one situation into another, where there are two jobs waiting for them.

There will be mere transfer of business. If a man is engaged in a business which is purely a luxury, it should be disorganized, for the time being, and he should welcome it as a patriotic duty; but if he is engaged in a mixed business—part necessary and part luxury—the neces-

sary part of his business will increase so that he can well afford to let his business in luxuries decline.

There has been in some people's minds—I think it is pretty well dissipated now—that the Government could spend the same amount of money three times; first, by buying for less than a thing was worth—buying below the market, second by taxing away all the profits, if there were any profits left, and, third, by getting us to subscribe to bond issues. You cannot do that. We have got to have prosperous business if we are going to have the power of accumulation to furnish the finances to fight this war. It would be a disaster next to a great German victory to have disaster to our business structure, because if that came, we would soon be financially embarrassed, and could not go on with the war.

SUCCEEDING GENERATIONS MUST PAY THEIR SHARE

People like to escape taxation, of course; but really I believe there is the most patriotic desire to pay all the taxes that it is wisest to lay upon the business of the country. Put a great burden on this generation; yes, but do not put it on right at the first moment of the war; continue it after the war, if necessary. I think too many people as yet believe we are in a sort of paper war; that any real fighting is hardly on the program; that Germany is pretty well whipped already; that, in any event, it is a war on another Continent; that it is a long ways off; that the German armies are surrounded by the greatest military forces that ever collected; that it is months before we can really get into it; and that, probably, before that time, it will all be over. Do not believe it, or, at least, do not act on that theory. There are contingencies possible that would put a very different phase on this situation at an early date.

Who knows what the future of Russia is going to be? It is conceivable, however, that we might have a separate peace. Let us see what it means. It means the withdrawal of all the German forces on the eastern frontier. It might mean the return to the active ranks of a million and a half Teuton prisoners that are now in Russia. That would be quite an augmentation for the enemy forces. It might mean an opening of the food stores of Russia. With all that new advantage we might see a war that would look quite different from even the present serious situation.

WHAT OUR GAIN WILL BE

But I am not pessimistic. I see some wonderful by-products to come out of this war that are going to be written on the credit side, and I am not sure but what they are going to greatly overbalance anything that they cost us. We will learn this lesson of thrift, of which I have spoken; we will open permanent springs of wealth, if we can get millions of people into these habits of thrift. We are also going to learn another lesson; we are going to learn that we are fighting for a very valuable thing—Democracy—and that is what this fight is for. One of the great byproducts of the war is going to be that we will not only secure to civilization the permanency of Democracy, but we will, ourselves, recognize our duties of citizenship under a Democracy.

[Next week, we will publish extracts from the remarks of Secretary of the Navy Daniels, Secretary of the Interior Lane, Secretary of War Baker and Secretary of Labor Wilson.—Editor.]

Who's Who In Coal Mining

J. E. Butler

From the University of Michigan to the mountains of Kentucky is not such a long jump when measured in miles, but back in 1903 there was quite a difference in altitude between the civilization that prevailed in Ann Arbor and that which existed in some parts of Kentucky. It used to be that in the United States all pioneers went West. J. E. Butler, the present general manager of the Stearns Coal Co., at Stearns, Ky., rather reversed the general procedure and was one pioneer who went South and East.

Mr. Butler was born in Canada, in the Province of Quebec, in 1873. He was graduated at the University of Michigan in 1898. Soon after leaving college he



JOHN E. BUTLER

General manager of Stearns Coal Co. and the Kentucky and Tennessee R.R., Stearns, Ky.

became instructor in English and history at the Ishpeming (Mich.) High School. In 1900 he became principal of the Ironwood (Mich.) High School, and the following year was appointed superintendent of schools at Bessemer, Michigan.

In 1903, Mr. Butler cut loose from school work to take charge of the development work of the Stearns Coal and Lumber Co., at Stearns, in the heart of the Kentucky mountains.

Under his direction a number of mines were opened and a very respectable railroad was constructed. The large operations of the Stearns company are in reality a monument to the genius and industry of J. E. Butler. That he should have succeeded so well in his work, with-

out having had any previous engineering training, adds to the credit due his efforts.

Mr. Butler is a member of the American Institute of Mining Engineers. He has just finished a term as president of the Kentucky Mining Institute. According to his viewpoint, the most important position he ever filled

was that of captain of the 'Varsity baseball team at Michigan, back in '98." Having started this captain business so early, he became rather accustomed to it and has continued to be captain of something or other ever since. He contends that he has not accomplished much, but simply keeps trying.

The Labor Situation

General Labor Review

While the union miners in the anthracite field are disappointed in that they are not represented on the coal committee of the Council of National Defense they will do their best to keep up the production so as to meet the demands of the war. They say the policies of the committee in charge of the coal situation throughout the country are of a repressive character and prevent the men from going from one field to the other to take higher wages and better conditions of employment.

The miners at the Oneida colliery of Coxe Bros. & Co., at Oneida, threaten to strike for restoration of the train service cut off under the new timetable of the Lehigh Valley Railroad.

The coal companies request that the miners work on Memorial Day, on account of high coal production required for the war, fell on deaf ears at a majority of the mines. The mines and collieries had steam up and were ready for work, but the employees stayed away.

Efforts of the coal companies in the Lehigh region to operate their mines on May 30 in order to keep up production, proved futile. Only two collieries of the Lehigh Valley Coal Co. started up and they suspended at noon. Two of the four breakers of the Markle Coal Co. worked. Practically all of the other collieries were idle.

Although the employees at the collieries of the Kingston Coal Co. failed to work on Decoration Day, F. E. Zerbey, general manager, announced on May 31 that the company would allow one day's pay to every man who reported. At the five collieries of the company only 1000 men reported for duty in response to the appeal to keep the mines in operation.

The Lattimer local of the United Mine Workers adopted resolutions on May 31 that its members shall not remain idle on holidays except Christmas, New Year's, Good Friday and Easter. This action was taken in response to the appeals of the operators that as many of the suspensions be cut out as possible so that production may be kept up to the limit to meet the demands brought on by the war.

Unable to prove their claims for a rate of \$9.91 a yard for certain kinds of work, miners at the Lattimer and Milnesville collieries of Pardee Brothers & Co., Inc., lost their grievance under a decision on May 29, of Charles P. Neill, of Washington, umpire of the Anthracite Conciliation Board. He ruled that there can be no change from the established rate sheet.

Judge William H. Ruppel, of Somerset County, has announced that the preliminary injunction recently handed down and regulating the conduct of the striking miners of the Brothers Valley Coal Co. at McDonalstown has been made permanent.

Labor conditions are improved somewhat in the affected section of Somerset County, Pennsylvania. At Holsopple the Maple Ridge Coal Co. continues to increase the number of men at work and is now operating over 50 per cent. of normal. At Hooversville the conditions at the Knickerbocker mines remain quiet.

At the McDonalstown shaft of the Brothers Valley Coal Co. an injunction was granted early in the week restraining the strikers from intimidating or in any way interfering with the men at work or desiring to work. About 25 per cent. of the normal force is at work. Other miners on the Berlin branch of the Baltimore & Ohio R.R. are all at work again. At the St. Michael shaft of the Maryland Coal Co., a subsidiary of the Berwind-White Coal Mining Co., where a strike was started a couple of weeks ago by the unnaturalized Austrian miners, many of whom are employed, over 75 per cent. of the old employees have returned to work.

The Berwind-White Coal Mining Co. has made another increase in wages to its Somerset County coal miners, effective June 1. This places them on an equal footing with the last advance in District No. 2. Early in the week a recruiting officer of the regular army visited a number of the larger mines in Somerset County. He got 22 recruits from the Jenner mines of the Consolidation Coal Co. and 21 from the Jerome mines of the United Coal Corporation, and smaller numbers elsewhere.

New Scale Is Ratified

At a meeting of miners affiliated with the United Mine Workers in the Winding Gulf and New River coal fields of West Virginia, held in Charleston last week, the recent agreement arrived at in Cincinnati, providing for increases in the wage scale, was ratified, and will accordingly go into effect.

Union coal miners in the vicinity of Boonville, Ind., are making efforts to unionize men in the employ of the small mines which market their outputs by wagon. Prevailing prices have enabled the small operators to haul by wagon and clear handsome profits, partly because of the low wages said to be paid the nonunion men. There is much activity in coal land and speculators are taking options, while abandoned mines are being reopened.

United Mine Workers and other branches of organized labor are making a strong effort to have the Illinois legislature pass a bill to prevent courts from granting injunctions in labor disputes except for the prevention of irreparable damage to property. A bill of this import was defeated recently in the House but a similar bill is pending in the Senate. The labor people, undismayed by the action of the House, are bringing all their influence to bear upon the Senate in the hope of favorable action. Senators are being showered with telegrams. The bill was up for second reading a few days ago but a number of amendments were proposed and action was postponed to permit of the amendments being printed and considered by the senators.

Seventy-five miners employed at the Central mine near Springfield, Ill., struck recently because their demand to be hauled from the bottom of the shaft to their rooms was not complied with. The men asserted that because of the distance of their rooms from the shaft they lost much time in going and coming. Arbitrator J. W. Sullivan, of the United Mine Workers, was sent to the mine by State President Farrington. After a conference with Dan Clark, representing the operators, the men were persuaded to return to work pending further consideration of their demand. A bill is pending in the Illinois legislature which provides that all companies operating coal mines in the state must furnish conveyances to carry miners from the shaft bottom to their work.

Miners employed by the Royal Collieries Co. at Virden, Ill., after being on strike for a week, returned to work with the understanding that the objections of a part of them to the mine superintendent would have consideration. Only a part of the 500 men employed at the mine struck but a shutdown was necessitated. Union officials ordered the strikers to return to work, but for a week they refused. President Farrington held that they were violating the union contract and refused to attempt an adjustment of their grievance until they returned to work. The particular complaint against Mine Superintendent William Earl was that he caused the fan to be stopped when men were in the mine. Earl admitted that it was stopped to admit of necessary temporary repairs being made but said that it was at night when only a few men were below and that there was enough natural ventilation to obviate any probable danger.

The Council of National Defense has quickly brought influences to bear to restore operation in seven mines of the Mayer Coal Co. and eight of the Sheridan Coal Co., in Crawford and Cherokee Counties, Kansas, where miners struck in opposition to mechanical shotfirers. Alexander Howat, president of the district, ordered the strike. The Southern coal production committee of the National Council communicated at once with Secretary Wilson of the Department of Labor at Washington, with President White and with Governor Capper of Kansas. Secretary Wilson communicated with President White, and also sent word to President Howat suggesting that the men be put to work immediately, and that the controversy be settled under the terms of the existing contract. President White appointed a committee for a conference. Governor Capper is also taking action.

The new labor organization, the "Working Class Union," caused trouble at Hartford, Ark., last week by driving away Rock Island men who were repairing mine tracks; the committee has asked the governor of Arkansas to intervene.

Pooling Tidewater Shipments

A meeting of operators and shippers of bituminous coal, representing every district shipping coal to the North Atlantic ports, was held at the Bellevue-Stratford Hotel, Philadelphia, on Monday of this week, for the purpose of discussing the advisability of forming a pooling arrangement, as suggested by the Committee of National Defense. A committee of five operators was selected to make a report, but before making such report it was decided that this committee should confer with the Department of Justice at Washington and receive from it a written ruling on the legality of the proposed plan.

The morning session was an open one and was addressed by E. B. Chase, of the Philadelphia office of the Berwind-White Co., who had attended the conference with the Federal Trade Commission held in Washington the previous Thursday, and who told of the results of that meeting. T. H. Watkins, of the Pennsylvania Coal and Coke Corporation, was chosen as chairman of the meeting, and after much discussion it was decided to appoint a committee to select another committee of five to make a report on the proposed arrangement. This committee of five was chosen at the afternoon session and is composed of S. Pemberton Hutchinson, president, Westmoreland Coal Co.; Rembrandt Peale; J. H. Wheelwright, Consolidation Coal Co.; S. A. Scott, New River Coal Co., and Isaac T. Mann, of the Pocahontas Consolidated Collieries.

The committee, while in Washington Wednesday, conferred with similar committees representing consumers, railroads and transportation companies, at which time the entire plan was discussed.

A discussion of a pooling plan was held by shippers and receivers of both the Lackawanna and Lehigh Valley coals at the New York offices of both companies on Tuesday of this week. The meetings were separate, the shippers and receivers of each company assembling in the offices of the respective companies. While nothing definite was made public as to the outcome of the two meetings, it was understood that the proposed plan of pooling the coals of the shippers on each road was favorably considered.

Activities of the Federal Trade Commission

Investigators of the Federal Trade Commission sent to New York City to examine into the anthracite coal situation have not as yet completed their work.

That the investigation is to be thorough is evident from the receipt here by middle houses of a communication from the commission setting forth the purposes of the commission in making the inquiry and inclosing a form for a special report. Accompanying this communication is a copy of a letter sent to anthracite operators, and instructions concerning the making of the report, also showing the penalties for failure to forward it or for making false entries.

It is also understood that retail dealers have received a form for a report showing what coal they have purchased, from whom, and its cost. The commission's letter reads as follows:

In furtherance of the determination of the commission to use its utmost powers in this emergency to promote moderate prices in the anthracite industry and to encourage stability in prices, there is inclosed a form for a special report requiring you to furnish to the commission, weekly, until further notice, a statement of your total sales tonnage, with purchase data and gross profit on such sales.

These reports are to cover only "jobbing" business as distinguished from "wholesale" business. For purposes of this report "jobbing" business is the buying and selling of anthracite which is not physically received, discharged and reloaded by you; and "wholesale" business is the buying and selling of anthracite which is physically received, discharged and reloaded by you.

If your business is entirely or in part a jobbing business, you are required to report on the attached form each sale that is in the nature of a "jobbing" transaction, as defined above. No transactions that are "wholesale" business in the sense just defined should be reported on this form.

Your attention is invited to the attached copy of a circular letter sent to all anthracite operators.

The commission desires to emphasize to you its thought that the present situation calls for public-spirited effort on your part to protect the domestic consumers of anthracite by seeing to it that only the normal margins are obtained and that, so far as within your power, the domestic sizes are distributed in such a way that household consumers shall receive their normal share of coal.

For your convenience a duplicate copy of the form is inclosed for your files.

Members of the staff of the commission will be at Wilkes-Barre, New York and Philadelphia in case you desire to consult them direct. Their addresses will be as follows: Robert H. Vorfeld, Fort Durkee Hotel, Wilkes-Barre; David P. Smelser, Hotel Flanders, New York; L. C. Floyd, Hotel Walton, Philadelphia.

The letter to the operators, accompanying the foregoing, reads:

In view of possible misunderstanding of the commission's view in the matter of the advantage of direct sales by anthracite operators this letter is being sent to you and to all the other producers.

Each operator will, of course, determine for himself his policy regarding the customers or class of trade to which he will sell, but the commission deems it only just to say that it has not intended to suggest any change in the normal course of distribution through such wholesale concerns as perform the necessary service of discharging, storing and handling coal for the territory tributary to their docks or storage points.

Moreover, the commission believes it would be a public advantage if operators continue, for the present at least, to sell to responsible jobbers sufficient coal for the requirements of their "regular customers," where they feel assured that the jobber will not speculate with the coal, and where refusal to sell would throw these "regular customers" into the market as "new customers" of operators in such a way as to produce an abnormal buying pressure through their efforts to get coal.

The commission does believe that operators should make all proper and reasonable efforts to see that their coal is not at any time sold through jobbers who resell to other jobbers or who make abnormal and unreasonable profits on their sales to retailers or consumers. The commission itself will use its powers to discourage jobbers from speculating in anthracite coal. To this end it will require from all jobbers special weekly reports of every sale, with full data, which will enable the commission to trace the coal and its price from the mine to the local destination.

The special report to be made to the commission is separated into two parts—"Sales Data" and "Purchase Data for Same Car or Barge." The individual columns under "Sales Data" provide for the following information:

Car number or name of barge; grade and size of coal; sold to —; date; f.o.b. or alongside point; gross tons; price per ton; amount received for coal; advances-transportation charges; that is, towing, freight, insurance, etc., and demurrage; and total amount received.

The information asked for under "Purchase Data for Same Car or Barge" is:

Purchased from —; date; f.o.b. or alongside point; gross tons; price per ton; amount paid for coal; transportation charges; that is, towing, freight, insurance, etc.; demurrage; total amount paid, and gross profit.

The instructions regarding the report, also showing the penalties for failure to comply, reads:

ANTHRACITE COAL SPECIAL REPORT

Mail to Federal Trade Commission, Washington, D. C., on or before Thursday, each and every week, the information required on attached form, for business of week preceding.

The information required by this report is ordered to be furnished pursuant to the power of the commission under subdivision (b) of Section 6, of "An Act to create a Federal Trade Commission, to define its powers and duties."

PENALTIES

Failure to mail this report within the time required will subject the corporation to a forfeiture of the sum of \$100 for each and every day of the continuance of such failure—Section 10, Federal Trade Commission Act.

Any person who shall wilfully make or cause to be made any false entry or statement of fact in this report shall be subject to a fine of not less than \$1000 nor more than \$5000, or to imprisonment for a term of not more than three years or to both.—Section 10, Federal Trade Commission Act.

Pennsylvania Tax Refund

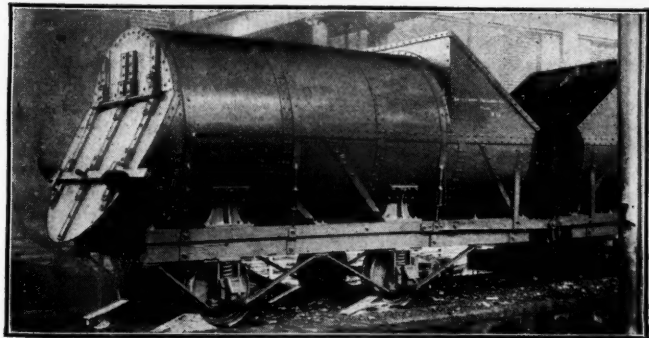
At a meeting of the Philadelphia retail coal exchange the recent decision of Judge Kunkel on the coal tax act of June 1, 1915, was discussed by the members. They are emphatic in their opinion that they are entitled to a refund of the 2½ per cent. levied on all shipments from June 1, 1915, to Jan. 1, 1916, because the act falls for the same reason as the previous one of July 1, 1913, and on account of which the mining companies refunded to the dealers the amount collected. Of course, the decision on this latter act was made by the Supreme Court after an appeal from the lower court, but it is not thought likely that the companies will make a similar appeal in this instance, as the present opinion is based on the opinion of the Supreme Court in the other case.

However, it seems possible that the dealers will be somewhat slow in pressing their claims now, as they are not disposed further to annoy the shippers at a time when they are seeking their favor and constantly pleading for more coal. It can almost be taken for granted, too, that the shippers are quite loath to take any action now, when they are so heavily taxed with work.

New Apparatus and Equipment

New Monitors

The accompanying illustration shows a monitor which was recently built by the Covington Machine Co., of Covington, Va., for the Loup Creek Colliery Co., of Page, W. Va. This is one of two machines that were furnished the Loup Creek company.

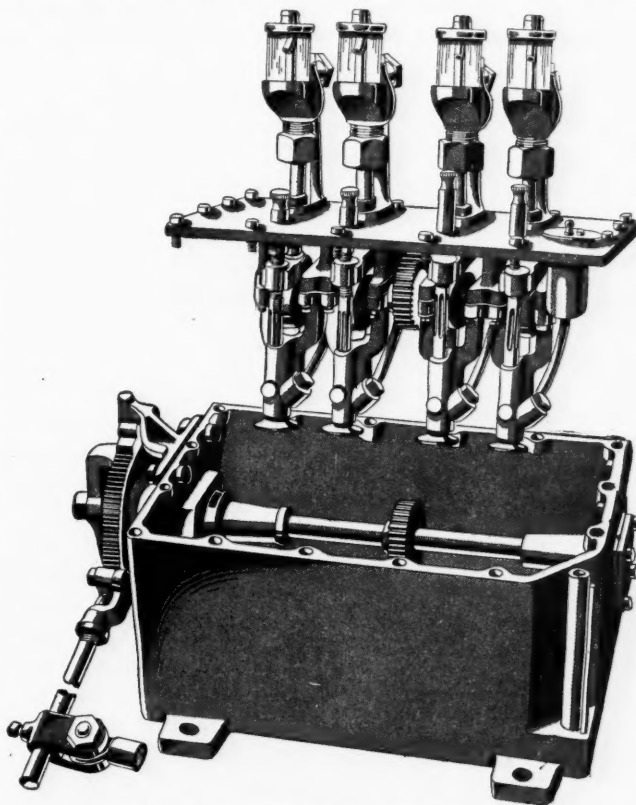


MONITOR READY FOR SHIPMENT

As may be seen, these monitors are designed to operate on a steep incline and are so constructed as to open and discharge their contents on arrival at the dumping point. The cylindrical shape has many advantages, the most obvious of which is the slight danger of coal being spilled along the track. Furthermore, the capacity of the monitor is large compared to the weight of material used, and the construction is comparatively rigid, obviating warping or twisting stresses on the frame.

Invincible Oil Pump

Accessibility of a machine is a feature that appeals to an engineer, and it is almost as essential in the design as it is to make the parts to work together. One feature



DETAILS OF THE PUMP CONSTRUCTION

of the "Invincible" mechanical oil pump, manufactured by the Lunkenheimer Co., Cincinnati, Ohio, is the accessibility that is had, as shown by the illustration. Practically all parts are attached to the lid, so that upon removing it the parts are also removed from the pump case. The pump is operated by a ratchet that revolves in the pump case, on the shaft of which is a gear that meshes with an eccentric shaft gear that imparts motion to the pump plungers. Auxiliary plungers are connected with forced-feed plungers and move in unison with them. On the upstroke of the auxiliary plungers oil is drawn through strainers in the bottom of the holders into the auxiliary plungers, from which it is forced on the downward stroke through tubes and passages to the sight-feeds. As the oil drops through the sight-feeds, it is drawn into the force-pump cylinder on the downward stroke of the plungers and is forced on the upward stroke to the engine cylinder. The quantity of oil fed is regulated by an extension of the auxiliary pump plungers. Independent feed regulation for each outlet is also provided. This pump is made with from one to four feeds.

War Sidelights

Under this heading in Coal Age each week we hope to publish items relating to war measures as they affect the coal-mining industry. We earnestly invite all our readers to send us interesting notes covering happenings which bear on the war, either in a military or an industrial way.—Editor.

A 13 x 20-ft. flag was hauled to the top of a flagstaff 50 ft. high by a committee of old soldiers at the Panama mine of the Ben Franklin Coal Co., of Moundsville, W. Va., on Sunday afternoon, May 27.

A flag-raising was held on Saturday, May 26, at the Lansford Colliery of the Lehigh Coal and Navigation Co., the flag being purchased by employees of shaft No. 4 and the company supplying the pole.

Forty-four members of the St. Louis Coal Club, St. Louis, Mo., after listening to an address on the Government war loan at the St. Louis City Club, each agreed to buy at least one of the Liberty bonds.

A 10 x 15-ft. flag was raised to the top of the 65-ft. iron mast in front of the electric power plant of the Wilson Creek colliery of the Delaware & Hudson Co. at Carbondale, Penn., on Saturday afternoon, June 2.

The Springfield Coal Co., Springfield, Ill., has given Charles A. Gordon, one of its officers, an indefinite leave of absence with continuance of salary, to permit him to join the U. S. Marine Corps for the duration of the war.

In the munitions factories of France deaf and dumb workers, who were excluded from factory work before the war, are now employed. It is said that they can concentrate on work better than those who hear and speak.

The Pennsylvania Coal and Coke Corporation, Cresson, Penn., has subscribed \$250,000 to the Liberty Loan bonds. A large amount of this will be disposed of to employees on the installment plan. Many employees of the company are supporting the fund.

About 2000 people attended the flag-raising exercises at the Hyde Park mine of the Lackawanna Coal Co. in Keyser Valley on Thursday, May 31. D. W. Moser, now on the retired list, who for many years was foreman of the colliery, raised the flag on its 82-ft. pole.

The Lehigh Coal and Navigation Co., Lansford, Penn., will buy Liberty bonds for its employees and dispose of them to the men on the installment plan, at the rate of \$2.50 deducted from every pay day for a \$50 bond, and twice that amount for the \$100 denomination.

The men employed by the Consolidation Coal Co. at Wyatt, W. Va., after an address by Superintendent Cunningham on "Thrifty, Industry and Patriotism," on May

29, promptly subscribed for \$3500 worth of Liberty bonds, which it is expected will reach \$5000 shortly.

The five divisions of the Consolidation Coal Co. have sent in the following subscriptions to the Liberty bond issue. West Virginia, \$61,650; Maryland, \$1400; Pennsylvania, \$9200; Millers Creek, \$10,950; Elkhorn, \$14,000. From miscellaneous sources \$4800 has been subscribed.

George Hippard, of Belleville, Ill., has his entire family of four boys enlisted and serving the United States. Mr. Hippard for the past twenty years has been a prominent coal operator in the Standard district. Three of the sons are in the officers' training camps and the youngest, a student in the Belleville High School, will join the Navy.

The miners employed at the Imperial mine of the Forsythe Coal Co., near Belle Valley, Ohio, held an impressive flag-raising recently when a holiday was declared. The flag was raised on a pole 85 ft. high, located on a high hill. The occasion was marked by a display of patriotism on the part of the mining population.

W. J. Richards, president of the Philadelphia & Reading Coal and Iron Co., Pottsville, Penn., has issued a circular letter to all the employees of the company, urging upon them the importance of each one doing his part in subscribing to the Liberty Loan, be the amount ever so small. It is understood that quite a few of the men in the local offices are heeding the advice.

To offset the possible shortage in tin cans, a bulletin has recently been issued by the Bureau of Foreign and Domestic Commerce, advising the use of fiber containers wherever possible. Such food products as coffee, tea, alum, baking powder, spices, raisins and prunes, it is claimed, may be successfully packed by producers and manufacturers in paper or fiber containers.

More than 2000 people attended the flag-raising at the Lehigh Valley Coal Co.'s Franklin colliery, Wilkes-Barre, Penn., on May 31. The pole is 86 ft. high, made of steel pipe, and is set in a substantial base of concrete. Surrounding the concrete base is a flower bed and grass plot about 8 ft. wide, inclosed with a bronze chain, supported on four concrete posts. The whole presents one of the prettiest sights in the Wyoming Valley.

The steamship "Lackawanna," which left Norfolk, Va., a short time ago with a cargo of coal for Havana, was slightly damaged by an explosion in the hold of the vessel while discharging cargo. It is the opinion of officers of the boat that bombs were placed in the coal while the vessel was loading there. It was reported that two men were slightly hurt and one seriously, but the resulting fire was put out without much difficulty.

Luzerne County, Pennsylvania, authorities did not trifle with the antagonistic attitude of the I. W. W. toward conscription registration. Learning that a meeting had been called for Yatesville, to protest against conscription, Sheriff Buss sent deputies to notify organizers that if a meeting were held, every participant would be arrested. Troop B of the state police was held in readiness to carry out the threat. There was no meeting.

On May 29, the employees of the Pine Brook colliery of the Scranton Coal Co., Olyphant, Penn., raised a new 16 x 24-ft. flag on an 85-ft. pole at the colliery site. A unique feature of the exercises was that "Old Glory" was raised by Patrick Managan, an employee of the colliery for 49 years, David Francis, connected with the company for 47 years, and Fred Davis, who has been with the company for 36 years. Over 100 employees of the colliery participated in the exercises.

Just as he was about to shovel coal beneath the boilers of the Standard Fuse Corporation, at Paulsboro, N. J., a fireman discovered a stick of dynamite in his shovelful of coal. The concern has been working on fuses for the British Government since the beginning of the war, and the finding of the dynamite gave rumor to the report that efforts were being made to destroy the plant. It is thought, however, by a number of the officials that the explosive may have been accidentally dropped in the coal at the mines.

Mine operators are seeking through their own efforts to effect an equitable distribution of coal to those best entitled to it. Last week, a newspaper published the story that some Kansas mills were likely to suspend operations, because of inability to get coal. C. P. A. Clough, vice president of the Jackson-Walker Coal and Mining Co., Kansas City, Mo., wrote Governor Capper, offering to help out any industry that was really in need of coal; he said that his company, while booked up nearly to capacity with contracts, had reserved enough to help out in an emergency in just such cases. He added that after July 1 there probably would be no such reserve possible with his company.

The following letter has recently been sent out by the Bureau of Mines, signed by Secretary Lane, to all the mining companies in the United States.

My dear Sirs:

It has come to my attention that certain of the mining companies throughout the United States have officially taken up for their employees, the wives of employees, and children, plans for the growing of vegetables in the yards of the workers and even on vacant land owned by the companies. Some of the companies have even gone to the extent of supplying, either free or at cost, fertilizer and seeds, and also made provision for the plowing of the ground at actual cost. In other instances the companies have offered prizes for the best gardens of \$25 for the first; \$15 for the second; \$10 for the third, and a number of minor prizes, with the result that a great amount of patriotic enthusiasm has been aroused.*

I have been so impressed with the starting of such a movement, modest as it is at the present, that I feel it to be my patriotic duty to urge upon all mining companies, where the conditions are favorable, to start some similar plan that would in the end result in a vast increase in the amount of food products raised during this time of national emergency.

War today is as much a matter of food supplies as actual fighting in the trenches. The man or woman or child who raises enough vegetables this summer in his garden to feed the family places at the disposal of the men at the front fighting for a world democracy just that much food.

The growing of these vegetables has also the additional virtue of giving healthful outdoor exercise to the people and for their

consumption vegetables which are fresh. Back of all this you are helping to maintain the soldiers and the less fortunate populations of the world that have been thrown out of their natural orderly life by the encroachment of the war upon their properties.

The Department of Agriculture is enthusiastically in favor of this movement and has prepared for the use of those interested Farmers' Bulletin 255, "The Home Vegetable Garden," which will be sent to anyone who makes application. This pamphlet has already proved of valuable assistance to those engaged in making a garden. I take pleasure in sending to you under separate cover a copy of the pamphlet, so that you may see its value in this work.

It is suggested that those who join this garden movement shall place in their gardens an American flag as a reminder that he who serves his country in this capacity serves the flag.



Mining Work in the War

Some intimation of the magnitude of the miners' work in the European War can be gathered from the following excerpt from a dispatch to the *New York Times*:

The Germans had held certain quarries on the western front for two years and seven months. Day by day, from September, 1914, more guns, bigger guns concentrated their fire upon them; but they held out. Week by week, month by month, year by year, more guns and still bigger guns were added, until there was an unbroken line of guns that in April of this year opened the heaviest fire the world has ever known, pouring 18,000 tons of high explosives upon the quarries day after day; and still they held out.

I have often heard remarks in the last few weeks that the chief trouble with the recent offensive was that the artillery fire was ineffective. Yes, it was ineffective, but now that I have seen those quarries, I know why. Until the orders arrived for the infantry to advance and take those quarry heights "at all costs," the Germans were quite as safe there as in a submarine far below the surface of the sea.

I went down into one of the quarries. The opening was a tiny hole in solid granite. I went down and down in pitch blackness. The officer and I stumbled down, fumbling at solid rock walls. A soldier came up to meet us with an electric lamp, and below we could see a line of wooden steps, at least a hundred of them. Then we came into a great arched cavern that led into another similar one, and then to another, and then into long galleries and through dark, narrow passages, where we had to stoop low, only to come into other caverns with exits leading in various directions, and so on until, at least half a mile toward the German rear, from where we entered, we walked out again into daylight. That quarry alone was big enough to secrete 5000 German soldiers, who poured from a dozen similar exits when the French infantry advanced.

Every gallery of these underground fortresses the Germans raked with machine guns when stormed. The artillery positions were so constructed that the guns could be whirled behind granite walls whenever necessary to avoid destruction by the concentrated French fire.

They were the strongest defenses I have ever seen. They made every other fortress, every trench line, every concrete abri I have visited seem weak.

COMING MEETINGS

American Society for Testing Materials will hold its annual meeting June 26-30 at Atlantic City, N. J., with headquarters at Traymore Hotel.

Canadian Retail Coal Association will hold its annual meeting at Toronto, Ont., Canada, June 14 and 15. Secretary, B. A. Caspell, Brantford, Ont., Canada.

Mine Inspectors' Institute of the United States of America will hold its tenth annual meeting July 10-13 at Indianapolis, Ind. Secretary, J. W. Paul, Bureau of Mines, Pittsburgh, Penn.

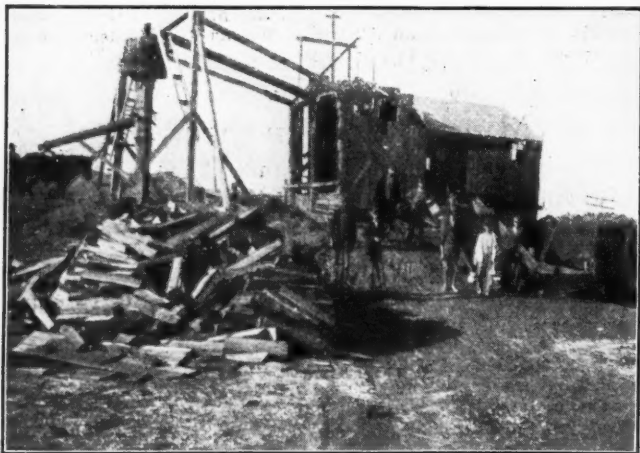
American Institute of Chemical Engineers will hold its semiannual meeting June 20-22 at Buffalo, N. Y. Secretary, J. C. Olsen, Cooper Union, New York City.

American Institute of Electrical Engineers will hold its spring meeting June 25-30 at Homestead Hotel, Hot Springs, Va. Secretary, F. L. Hutchinson, 33 West 39th St., New York.

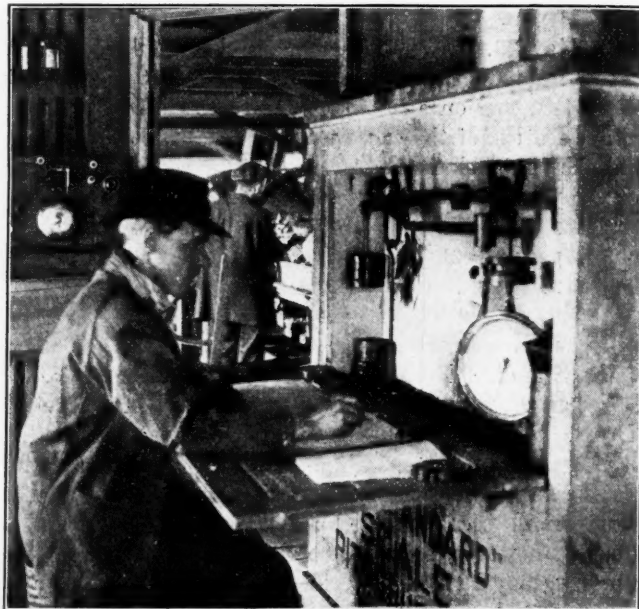
Illinois and Wisconsin Retail Coal Dealers' Association will hold its annual convention at Danville, Ill., June 12-14. Secretary, I. L. Runyan, Chicago, Ill.

Rocky Mountain Coal Mining Institute will hold its next meeting June 18-20 at Glenwood Springs, Colo. Secretary, F. W. Whiteside, Denver, Colo.

Snapshots in Coal Mining



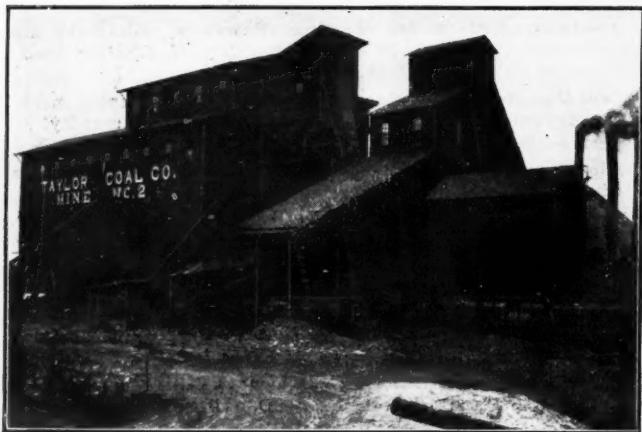
THIRLWELL COAL CO.'S MINE NEAR PLEASANTON, KAN.
A HORSE HOIST IS USED FOR HOISTING COAL HERE



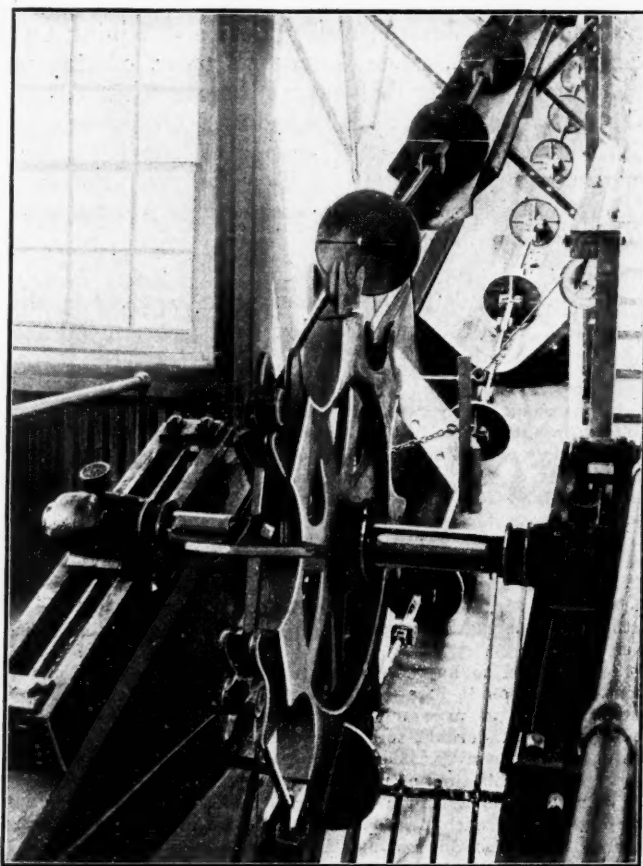
STANDARD SCALE INSTALLED AT THE BLUE DIAMOND
COAL CO.'S TIPPLE, BLUE DIAMOND, KY.



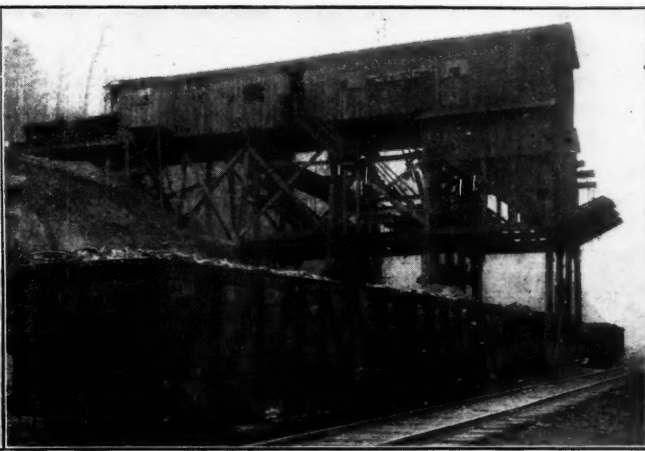
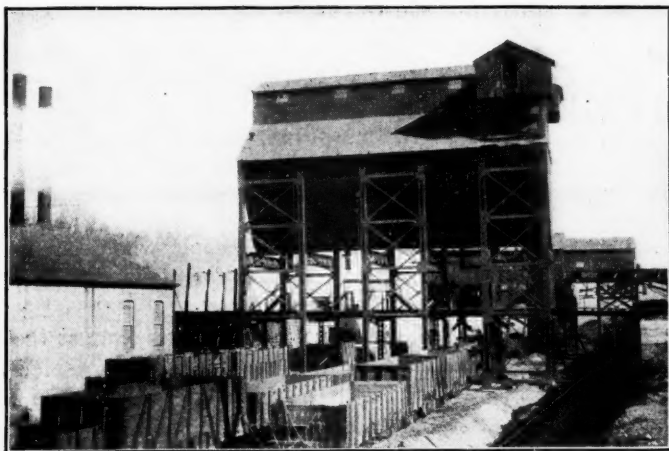
UP-TO-DATE COMMISSARY STORE OF BLUE DIAMOND
COAL CO., BLUE DIAMOND, KY.



SURFACE PLANT OF TAYLOR NO. 2 MINE,
HERRIN, ILL.

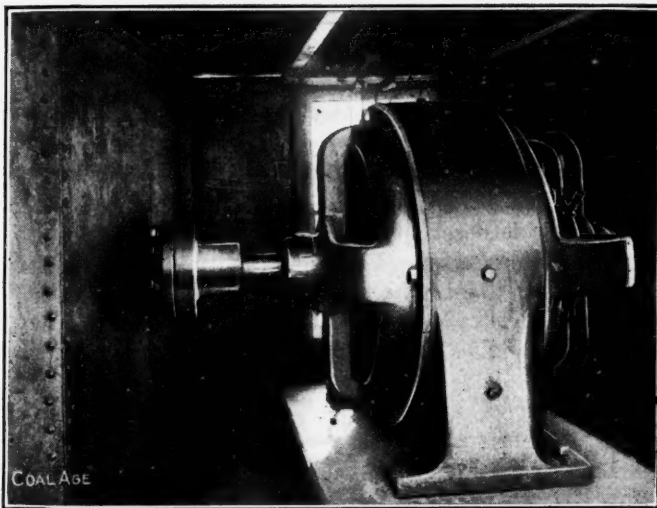


DISK CONVEYOR IN OPERATION AT PLANT OF BLUE
DIAMOND COAL CO.

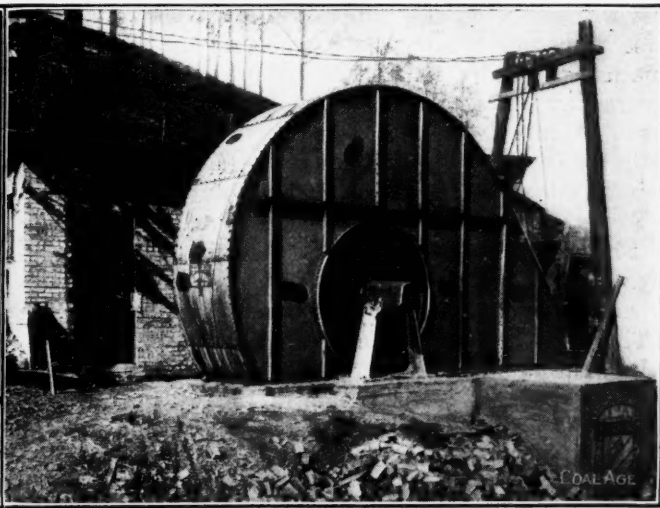


NO. 1 MINE OF DAVIS COLLIERY CO., AT COALTON, W. VA.

NO. 11 TIPPLE OF DAVIS COLLIERY CO., COPEN, W. VA.



SHUNT-WOUND MOTOR (50 HP., 230 VOLT, 200-400 R.P.M.)
DIRECT-COUPLED TO 15-FT. UPCAFT FAN, TURKEY
RUN COLLIERY, SHENANDOAH, PENN.



MINE FAN DRIVEN BY 40-20-HP. 900-450-R.P.M. "K" 220-
VOLT MULTISPEED MOTOR, J. K. DERING MINE,
CLINTON, IND.



NEW STORAGE YARD FOR LOADED CARS IN THE TOWN OF BEVAN, CANADIAN COLLIERIES, VANCOUVER
ISLAND, B. C.

Editorials

Get-it-ism vs. Pay-triot-ism

The patriotic action of the West Virginia operators in the matter of supplying the Navy Department with coal at a figure substantially under the ruling market price was gratifying evidence of their loyalty. But it was only a trifle compared with what is to follow. Already the Government is gradually making its views known concerning the excessive prices on certain contracts with industries engaged on Government work. The coal operators already see the handwriting on the wall and should prepare to meet the issue squarely.

It will not be an easy pill to swallow. For the past three years this country has experienced the most phenomenal prosperity in its history, prosperity that has fostered an extravagance that will be difficult to live down. Things that would have been regarded as luxuries in the depraved days preceding the fall of the French monarchy have become a common necessity with us.

To sustain this pace we have acquired a spirit of fierce "get-it-ism." Get, get, get, has been the order of the day. Now we are to substitute for this pay-triot-ism. From now on our watchword must be: Pay, pay, pay.

This paying will be done in different ways. To the rich it will mean curtailment in their household expenses, fewer motors, heavy investments in Liberty Bonds, and donations to the Red Cross. To the young and robust it means the offering of their very lives to their country. And to you, Mr. Coal Man, it means the voluntary limitation of your profits to reasonable limits, earnest co-operation with the Government in its endeavor to assure adequate supplies and distribution, and a close personal application to your business to assure of no hitch in our war machine due to scarcity of that great basic commodity—coal.

Federal Investigators Active in the Anthracite Trade

Representatives of the Federal Trade Commission have recently done a lot of quiet work in anthracite trade circles and they are collecting considerable detailed information. They want to know the tonnage received by months this year as compared with last, the prices charged by the shippers and the rates at which the coal was resold to the consumer. They are also asking for a record of the number of cars ordered through each operator or middle house and the number of cars each shipped on same, though this latter information is only desired for recent months. It is also known that one of the largest companies is keeping a minute record of every car shipped and that the management is to receive a daily report not only showing the city or town but the consignee who receives the coal. Apparently it is the intention to avoid favoring any one section or firm and to have the production distributed impartially. The retail men are hoping that this information will have a tendency to cut off the

shipment of carload lots to certain people who seem to have sufficient influence to get coal for their domestic use.

We understand there have been complaints against the shippers by the dealers who felt they had grievances, but when their cases were looked into they were usually not well founded. Sometimes it was because their credit was not of the best, and in others it was found the complainant only endeavored to buy coal from the supposedly neglectful shipper when there was a scarcity, as has been the case for nearly a year now. Such cases are unfortunate, as they cannot but help to weaken the arguments of those who can justly claim they are being slighted.

As to this latter class, we expect to see them very slow in reporting their cases, as they are usually the ones most familiar with conditions and who are the least likely to make a move that would in any way embarrass the selling agents whose good will they are most anxious to retain. In fact, it looks very much as if the chronic kicker, who as a rule does not figure in the trade, is trying to stir up trouble for some one, while the conservative dealer is making the best of a trying situation by keeping his nerve and his trade, and hoping and believing that before the snow flies he will have coal for all who can pay for it.

How the Allies Might Have Lost the War

If the United States had only come to the conclusion that steel was a necessity of life like transportation—"a prime necessity of life"—then we would probably have legislated all the steel concerns into bankruptcy, and instead of the United States tipping the balance against the Central Empires there would have been a distressing parity in resources.

But we did not think steel essential. We did not ask how low a rate it could stand without bankruptcy, as we are now asking about the railroads, and as a result the production of steel in America advanced by leaps and bounds, whereas the mileage and equipment of railroads relatively stood still.

When the war started we had the blast furnaces, the converters, the rolling mills, the technical experts, and the workmen, and the Allies knew where to come. They found plants well equipped and able to increase output immensely. The railroads failed all along the line, for their equipment was run down, they could not pay fair wages to their track hands, and they did not have cars, locomotives, terminal facilities or shops to meet the multiplicity of their needs.

In the near past they had not grown like our other industries, and even when the war came with its general industrial stimulation, they were helped less than any other industrial enterprises. True they did more business and so made larger gross earnings, but on the other hand

they had to pay more wages and more for every item of consumption, especially coal. Yet the Interstate Commerce Commission hems and haws about conceding a fair freight-rate increase, and the utilities commission in Kentucky piously declares that it would be a crime to grant a 15c. increase and 15 per cent. on intrastate coal traffic.

The crux of the national situation is with the railroads. If we don't help them they can never help us. They are the source of nearly all our troubles and inefficiency. Let us hope at least that the hand of the conscription officer may be kept away from their personnel.

Mr. White's Unjustifiable Protest

John P. White, president of the United Mine Workers of America, has so long been safe and sane, that when we read his attack on the Committee on Coal Production we cannot help regarding it as "a case of nerves."

How he can conceive a committee headed by Peabody and manned by such men as Keefer, Warriner, Modewell and Taylor as a threat to unionism no one can imagine, even though it be admitted that Welborn and Ramsey have not been favorable to the miners' organization. Peabody has always been known rather as a friend of unionized labor than as its opponent, and the other four first mentioned have made frequent treaties with the miners' union.

Till Mr. White spoke we had yet to hear the first forecast or suggestion that the war furnished an opportunity for the abolition of collective bargaining. We consider the declaration as utterly without foundation in fact. We know that hitherto the reverse tendency has been shown, and we feel confident that it will continue throughout the war.

Let us note a few of the recent union advances. The central Pennsylvania district has recently been enlarged to include Indiana County. Unionism in western Pennsylvania has taken in large portions of northern Allegheny, northern Westmoreland and southern Armstrong Counties, which hitherto had resisted unionization. The growth of unionism has been extensive in central West Virginia, and a number of companies have recently signed with the union in Colorado.

To sum up the situation, we may quote Mr. White: "Recently, the fruits of years of toil and of struggle have come freely to the hands of the mine workers." This has been the outcome of war hitherto; it is likely to follow similar lines as it progresses.

But while we agree with Mr. White that unionism has made advances, we take issue with the insinuations behind that part of his statement which follows:

Gentlemen of the Council [of National Defense] and Mr. President: All men self-respecting enough to be good workers and manful fighters must be free. They must not be chained to the soil in a spirit of the older Russian serfdom as the arrangement proposed by your Committee on Coal Production would chain them. Every advance which they have gained by the difficult and oftentimes heroic upbuilding of their collective organization and collective action must be safeguarded as a priceless heritage for them and for the nation and for the nation's children.

This statement is sufficiently answered by quoting the statement of the Committee on Coal Production:

The operation of well-established mines should not be impeded, and we suggest and urge that the practice of moving miners from the mines of well-established producing companies or communities to other districts be discouraged, as this practice creates a state of unrest and tends to decrease the total output of coal.

The latter paragraph, penned, as stated, by the Committee on Coal Production, is directed against the action of certain employers of labor who have been sending labor agents into mining camps trying to induce the miners to leave and enlist themselves in a new service. It opposes the advertising for mine workers. It does not seek to prevent any man from working where he will. The only man coerced by this terrible paragraph is the operator, and the coercion is limited merely to an extremely mildly written suggestion that he will be a better citizen if he refrains from such action.

The Fuel Board has not the power or the will to compel even the operator. Its work is to plead and convince, and therefore we find it hard to understand Mr. White's statement.

Put Your House in Order

It will well repay the different entities comprising the coal industry of the country to read and seriously consider the appeal of the recently formed Committee on Coal Production of the Council of National Defense, which appeared in our issue of May 19.

Coming as it does from practical coal-mining men and not theorists—from men who have already left their impress on the fuel industry of the United States—this first communication of the "fuel board" presents forcibly, and in no uncertain terms, the part it is expected that coal-mine operators and mine workers will have to play in the strenuous times confronting us.

The chief bugaboos of the industry just at present are the inadequate car supply and a shortage of labor. Steps have already been taken to remedy the former, and it can be predicted with some degree of assurance that this thorn in the side of the operators will soon be removed, or at least bettered.

But the latter—the depletion in the number of men available to work the mines—is a problem not easy of solution.

Attracted by the financial appeals made by other industries, many mine workers are deserting the mines now, at a time when the life of these very industries is dependent on whether a sufficient tonnage of coal is produced to meet all demands. Added to this is a further exodus of those who are responding to the "back-to-the-farm" plea made by President Wilson in his recent proclamation. True, many of those composing this second class are men who came from the farm originally—to meet the abnormal demand for mine workers—but the prospects of being able to dispose of their produce at fair prices, and at an occupation that is more to their liking than the arduous duties of mining, are drawing them back to the land.

To these two classes must also be linked those who have already enlisted in either the army or the navy and those who may be drafted when conscription is started. While it is thought (or is it hoped?) by many that mine workers will not be drafted, the fact that the industry will escape this further "drawing off" is by no means guaranteed.

The question naturally arises, then, "How are the mines to meet the issue without sufficient men to work them?"

A hint to one of the few possible answers to this query is given in the paragraph of the fuel board's communica-

tion which reads, "it may be necessary that active steps be taken to so far as possible confine the distribution and use [of coal] to those activities which are more nearly vital to the welfare and protection of the nation." In other words, if the emergency is not met, the mines will be placed under Federal control.

But there is another way in which the industry can meet the situation, and in a manner which will negate the possibility of Government intervention; that is, many of the mines must set in immediately "to put their house in order" by adding new equipment, discarding worn-out and obsolete apparatus for improved types, and generally substituting added machine-power for the ever-decreasing man-power.

And the time to get after this matter is not when something has happened and production is hampered—or possibly shut off completely—but right now, when the pressure has not yet been applied in full earnest.

The next few weeks should find mine engineers busily engaged in taking a careful census of how well their mine appliances are mobilized to withstand the onslaught of America's industrial forces; and from ball bearings to mine locomotives, hoisting equipment and cutting machines, every detail should be up to the mark. Only in this way can the industry do its bit.

It is Darwin's theory in another of its ever-recurring forms—the survival of the fittest—and those mines will be fittest which exert every endeavor to make themselves fit.

Subsidizing the Useless

The Federal Trade Commission ends an excellent report with the statement: "The price of bituminous coal, which is a great public necessity, should be fixed according to the same general principle which has been established in the conduct of public utilities. At a time like the present, excessive profits should not be permitted to be extorted from the public by producers and distributors of any prime necessity of life."

Situated as the coal industry is, probably little exception can now be taken to the regulation of coal prices. No objection is taken to the putting of a fair price on coal, but solely to the principle animating the commission, a principle as foolish as it is universal. Just now we are giving coal right of way on the railroad; we are urging everyone to start a garden; we are hunting around for men to work on the farm. In this way we are trying to advance the interests of those who are handling the prime necessities of life.

We realize that we must do this or do without things that are needed. Why not go further and say that generous profits should go only to those who are willing to accommodate us by producing those same prime necessities. Perhaps tobacco stocks would not then be so popular, and there might not be such a rush to cotton in the South if we sought to reduce rather than to make secure the profits in those industries, to the displacement of the much more needed cereal crops.

By reducing profits on the prime necessities of subsistence we are putting a premium on the production of the prime nonessentials or unnecessities of life; we are subsidizing uselessness. We demand that water be squeezed out of the staple industries and then leave the worthless occupations to gather luscious liquid like a watermelon.

The prices of coal just now need no stimulation other than the railroad car shortage affords, and they might be regulated without public disadvantage. But speaking generally about the essentials of life we protest if usefulness is to be regarded as a charge under which an offender may be, as it were, landed in jail to suffer restrictions and a meager diet. The world was made for the useful and not for the worthless.

Hewers of wood and drawers of water are all too few in every stage of the world's history. Let us be careful lest in regulating their hewing and drawing we make the investor, manager and workingman seek a less noble but more remunerative job.

RECENT LEGAL DECISIONS

Indiana Washroom Law—The superintendent of a coal mine, as well as an operator, may be subjected to the statutory penalty prescribed by the laws of Indiana for refusal to furnish mine employees with a washroom, on written request. (Indiana Supreme Court, *State vs. McQuade*, 115 *Northeastern Reporter*, 583.)

Free Lease of Railroad Land as Unlawful Discrimination—A contract by a railroad company to lease a tract of its land adjacent to its tracks for twenty years to a favored shipper, the sole consideration for the lease being the shipper's agreement to give the railroad company preference over other roads in making shipments, was unlawful and invalid as giving the shipper unjust advantage over other shippers, in violation of the Interstate Commerce Act. (United States Circuit Court of Appeals, Fifth Circuit; *Central of Georgia Railway Co. vs. Blount*; 238 *Federal Reporter*, 292.)

Excessiveness of Damages—Where, in a suit for injury to a miner received through fall of rock, the evidence shows that he was seriously injured; that his legs and the lower part of his body were completely paralyzed; that he lost control over his bowels and bladder, and suffered great pain; that he was under constant treatment for a long time; and that, although only 20 years old and healthy when injured, the accident permanently incapacitated him for work, a verdict for \$14,000 is not excessive. (*Brack vs. B. F. Berry Coal Co.*, 196 *Illinois Appellate Court Reports*, 192.)

Illinois Mines Act Applied—A coal operator's failure to have sprinkled or sprayed the roadways of a mine, as required by the Illinois Mines Act, will be deemed to have been willful, rendering him liable for death of a shotfirer, attributed to an explosion resulting from such omission. Contributory negligence of the decedent cannot be asserted as a defense against liability. A verdict of a coroner's jury as to the cause of death is legal evidence on that question in a suit brought to recover damages from the operator. (*Jones vs. Crescent Coal Co.*, 196 *Illinois Appellate Court Reports*, 218.)

Injury to Child Caused by Exploding Dynamite Cap—A nine-year-old girl while on a coal company's premises near the power house found two dynamite caps in a cupboard which had been placed on the ground on its back. While she was carrying the caps away, they exploded in her hand, causing serious injury. Held, that if the company knew of the presence of the caps on the premises in a place accessible to children, there was negligence, making the company liable for the accident; otherwise there was no responsibility. (*Kentucky Court of Appeals, Smith vs. Carter Coal Co.*, 191 *Southwestern Reporter*, 631.)

Injury to Operator of Undercutting Machine—The general rule of law that obligates an employer to use ordinary care to furnish his workers with a reasonably safe place in which to work extends to the case of an operator of a coal-undercutting machine, so that where he does not assume the duty of inspecting or propping the roof over his place of work, the employer must do it. "A servant does not assume the risk of the master's failure to use ordinary care to furnish him a reasonably safe place to work, unless the dangerous conditions are known to him, or are so obvious that a person of ordinary prudence in the situation would have observed and appreciated them." (*Kentucky Court of Appeals, Price's Administrator vs. Proctor Coal Co.*, 189 *Southwestern Reporter*, 923.)

Discussion by Readers

Mine-Safety Inspector

Letter No. 5—I was interested when reading the letter of "Lumen," *Coal Age*, May 12, p. 847, to note that he does not agree with the suggestion of employing a mine-safety inspector.

It may be unnecessary to employ such an official in the bituminous district of Pennsylvania, where the law requires the mine foreman or one of his assistants to examine each working place in the mine at least once each day when the men are at work. The case in Illinois, however, is wholly different. The law here requires a state mine inspector to visit and examine each mine in his district at least once in every six months, or oftener if necessary; while the mine manager (foreman) is required "to visit each working place in the mine at least once in two weeks." These requirements, of course, are in addition to the requirements that the underground workings shall be "examined by a certificated mine examiner within 8 hours preceding every day upon which the mine is to be operated."

Now, while the miner is sure that his place has been examined in the morning by the mine examiner (fireboss), it is quite evident that the visits of the mine manager to a working place are few and far between, as it is generally the case that he does not desire to do more than the law requires of him, in view of his many other duties in the mine. It seems to me strange, also, that the law should require the mine inspector to examine a mine only twice a year, except in special cases. In this county, it is true that the county inspector gets around about every six weeks, probably because there are so few mines working here.

It would seem that if the mine manager is so taken up with other duties that it is impossible for him to visit each working place oftener than once in two weeks, it is all the more important that a mine-safety inspector should be employed to make up for this lack in safety inspection.

MINING LAW AND SAFETY INSPECTION IN FRANCE

The mining law in northern France empowers the miners to choose a competent man of their own number, whose duty it shall be to make 12 visits to the working places every 15 days, not counting the extra visits in case of accident. The man chosen by the miners is virtually a "mine-safety inspector." He makes his examination, and his report is posted at the mine regularly. Any man found guilty of unsafe practices is reported to the manager's office and fined. In these mines, the safety inspector is only responsible for the safe condition of the working places and the safe performance of the work by the miners. The other mine officials attend to getting out the coal and making a good tonnage record.

Let me say, in closing, that I would recommend the use of the same means in the mines of this country,

and there are many certificated men here who are capable of filling such positions. I was glad to learn that this question was discussed a short time ago by the state mine inspectors, as I am sure the appointment of a daily "face boss," to act as a mine-safety inspector, would be welcomed by our miners in Illinois. FOREIGN MINER.

Peru, Ill.

Preventing Mine Accidents

Letter No. 6—The degree to which we succeed in preventing mine accidents depends, I believe, very largely on the relation that exists between the mine foreman and the miners working under his charge. When visiting a miner's place and finding him working under roof that is not safe, a foreman will secure more prompt obedience on the part of the man by instructing him in a kindly manner to set the needed timber, instead of cursing him for being careless or using other harsh language.

While working as assistant foreman in central Pennsylvania, I knew of many instances where the miners left their places and sought work elsewhere, solely because they could not get along with the foreman. I recall instances where men left good places to mine coal at another mine where there was from 6 in. to 2 ft. of dirty coal, but where the foreman in charge treated his men with consideration.

RELATION OF MINE FOREMAN TO HIS MEN

While it is not necessary that a foreman should become familiar with his men, I maintain that he should take a sympathetic interest in their welfare. A kind word goes a long way, is never forgotten, never fails to bring results and is an important factor in preventing accidents. Foremen who follow this line seldom have trouble with their men and usually have fewer accidents to record.

When the Workmen's Compensation Law went into effect more than a year ago many of the mines adopted the practice, suggested in the interest of safety, and appointed a mine-safety committee, composed of miners whose duty it was to inspect the mine and offer such suggestions as they thought would afford greater safety or improve the welfare of the men. Some operators, however, did not fancy this procedure, fearing that it would result in making the men dictatorial, which did not prove to be the case in a single instance, as far as my knowledge goes.

An important point in the prevention of accidents in mines is that the foreman should not fail to obey the rules himself. A foreman should not think that being an authority gives him the right to disregard a single rule. The disregard of rules and regulations by a foreman is quickly observed by his men, who seldom fail to follow the example set by the boss. A foreman should be sincere and observe every rule with the same diligence that

he requires of the men in his charge. He should never criticize a miner in the slightest manner for the precaution taken to insure safety. The slogan should be: "The safest way is the best way." ASSISTANT FOREMAN.

Pittsburgh, Penn.

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Detecting Dangerous Mine Atmospheres

Letter No. 1—Kindly permit me to draw attention to what seems to be, at the best, a loosely framed reference to the use of oil lamps, acetylene lamps and canaries or mice, as means of detecting dangerous mine atmospheres, described in Technical Paper 122 of the Federal Bureau of Mines.

In speaking of the effects of a deficiency of oxygen on birds, mice and men, on page 9 of that paper, the following statement appears:

When oil lamps go out, an exploring party unequipped with breathing apparatus may advance into atmosphere dangerously low in oxygen, even though the party be carrying canaries.

An acetylene lamp does not go out until the oxygen in the atmosphere decreases to about 13 per cent. In such an atmosphere a party is in no immediate danger, although close at hand there may be atmospheres considerably lower in oxygen, so that by advancing a short distance the members of the party may endanger their lives. However, when canaries are used in mines—that is, after a disaster—exploring parties are invariably equipped with oil safety lamps and electric lamps, so that the danger from using acetylene lamps need hardly be considered here.

The author of this statement apparently concedes that canaries are of little use for the purpose of indicating a low oxygen content of the air. Following this he intimates that an acetylene lamp is extinguished when the oxygen content falls to 13 per cent., in which atmosphere he says a man is in "no immediate danger."

DANGER OF RELYING WHOLLY ON BIRDS AND MICE

Again, on page 10 of the paper, the author states, "In mixtures of air and nitrogen containing about 7.6 to 7.8 per cent. oxygen, canaries show pronounced distress. When the oxygen content is about 7 per cent., mice show considerable distress and a man is in grave danger of dying."

It appears to me that the point is not sufficiently emphasized that birds are only useful as a means of protection against the possible presence of carbon monoxide, although the author says that this is their chief value to parties exploring a mine after an explosion.

Many will question the statement that an acetylene lamp will be extinguished in an atmosphere containing 13 per cent. of oxygen. And it is on this fact that the author bases his statement that "the danger from using acetylene lamps need hardly be considered here."

On page 9 of the same paper it is stated, "An oil lamp goes out in air containing less than 17 per cent. oxygen." Now, it would seem safe to advocate that an exploring party, "unequipped with breathing apparatus" and carrying safety lamps should withdraw at once when these lamps are extinguished, instead of relying (as one less acquainted with the nature of mine gases might be led to believe would be safe) on a canary showing signs of distress at 7.8 per cent. oxygen, assuming no carbon monoxide is present.

The little margin between this percentage (7.8) and the 7 per cent. oxygen content described as being fatal

to man, is far too small to permit him to withdraw safely to fresh air. Most men who have had any experience in rescue work following an explosion in a mine will agree with me that danger is indicated when the oil lamp is extinguished, and it is time then to withdraw to safety.

In closing, let me say that had the men in the rescue party mentioned on page 9 been equipped with acetylene lamps, they would not have been left in the dark when their oil lamps were extinguished in 13.64 per cent. of oxygen. It is stated, however, that "the party immediately retreated."

I think that great care should be used in writing such papers to make their meaning clear to men who are unacquainted with mine gases and mining conditions, so that there will be no mistake or misunderstanding of the meaning. It would be a gamble on life for men to wait for a canary to show signs of collapse before withdrawing from an atmosphere in which an oil lamp became extinguished.

E. W. LAUBENSTEIN.

Clarksburg, W. Va.

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Mine Lamps

Letter No. 2—It seems to me that more attention should be given to the question of the relative efficiency of the different lamps used in mines. At the present time there are the common open-light oil lamps, the open-light carbide or acetylene lamp, portable electric lamps, and the gauze-protected safety lamps burning a volatile oil (naphtha), sperm or cottonseed oil, or acetylene gas, the last named being known as the "carbide safety lamp." All these types have their advocates who have, from time to time, discussed the relative advantages and disadvantages of the lamps.

Some time ago an interesting letter appeared in *Coal Age* [Vol. 8, p. 142], by J. W. Powell. The letter compared the several points of difference in the use of these various types of lamps and strongly favored the use of the open-light carbide lamp in nongaseous mines and the portable electric lamp in mines generating gas.

ADVANTAGE OF WORKING WITH A CARBIDE LIGHT

As far as the open-light oil lamp is concerned, it hardly seems possible that anyone who has worked with either the carbide lamp or the electric lamp would care to go back to the use of the oil lamp, which, as Mr. Powell has said, is dirty, smoky, and consumes a large portion of the oxygen in the air. I agree with him that this lamp should be consigned to the "rubbish heap." The introduction of "sunshine oil" for mine lamps marked a great improvement, as far as light and smoke were concerned; but, even with this advantage, oil lamps are fast being displaced by either carbide or electric mine lamps.

There is hardly a question that the carbide light is the best all-around means of lighting mines where gas is not generated in dangerous quantities. The lamp is too well known to need description. The acetylene gas is generated by the contact of calcium carbide with water, which is fed to the carbide in a uniformly regulated supply. The intensity of the carbide light is a strong argument in its favor, as every miner knows that a good light is an essential factor both in promoting safety in mines and increasing the earning power of the miner.

Where the mine is generating gas in dangerous quantities no form of open light can be used, and it becomes

necessary to employ either the portable electric mine lamp or a gauze-protected safety lamp. Until recently, safety lamps were designed to burn either a volatile or nonvolatile oil. A carbide safety lamp has since been designed by T. M. Chance. This lamp was described a year ago in *Coal Age* [Vol. 9, p. 580].

An interesting feature of the Chance carbide safety lamp is an automatic igniter, consisting of a "nichrome" wire (nickel-chromium alloy), which retains a sufficiently high temperature when the lamp flame is accidentally extinguished to reignite the gas that flows continuously from the burner. The tests of this ingenious device have proved very successful, and the lamp possesses a distinct advantage over oil-burning safety lamps, in this respect.

That safety lamps are a nuisance in mine work, although a necessity where gas is present, is freely acknowledged by everyone. It has been charged that the disease known as "miners' nystagmus" is largely due to the use of the dim light of the Davy safety lamp, especially when there is a natural weakness of the eyes that invites the disease. This charge, however, has been denied in respect to miners having normal eyesight.

The fact that the necessary use of safety lamps reduces the earning power of the miner is proved by the fact that coal operators in South Wales have been obliged to pay miners 4c. per long ton, extra, where safety lamps are used. When these disadvantages are considered in connection with the fact that electric lamps require no oil and demand no great attention on the part of the miner, the advantage of the latter type of lamp is clearly seen.

One feature that recommends the use of the electric mine lamp is the fact that the lamp of this type in common use is attached to the miner's cap and is always in position to throw a good light on his work, while at the same time permitting the miner to use both his hands.

The one question that has been raised against the electric mine lamp is the fact that it gives no indication of the presence of gas, which is an important feature of all flame lamps. It must be acknowledged that this objection refers alike to revealing the presence of an explosive mixture or of blackdamp, either of which is dangerous when present in sufficient quantity at the working face.

The natural question is, Should a lamp be used for mine work that will give no indication of the presence of gas? In this connection it may be remarked that many miners, myself among the number, claim to be able to detect the presence of marsh gas by the peculiar odor of the air when this gas is present. Also, it can be said that the presence of blackdamp is felt by the gradual effect produced on the system. Assuming these facts to be true, if a mine has been properly examined and is inspected at intervals by the mine officials, it would appear to be quite exceptional for a miner to be in any immediate danger from accumulated gases when using an electric lamp.

In closing, permit me to say that it is my belief that no safety lamp should be used in a mine except for the purpose of testing for gas. Since electric headlamps have been made so efficient that the circuit is broken immediately upon the accidental breaking of the glass, whereby the ignition of any possible gas is prevented, my preference is to equip a mine throughout with this type of lamp, and this I believe would bring our mines to a higher standard than the present.

W. L. MORGAN.

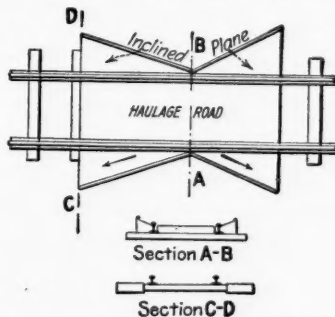
East St. Louis, Ill.

Mine-Car Rerailer

Letter No. 1—The author of the article entitled "Off Again, On Again, Gone Again," which appeared in *Coal Age*, May 5, p. 776, certainly hit on a humorous but particularly apt title for describing underground wrecks.

The matter to which he has called attention in his article is an important one and cannot fail to interest mine officials in charge of underground work, particularly motormen and drivers. Anyone familiar with underground haulage knows that derailments occur frequently and cause much delay and annoyance, as it is a difficult matter oftentimes to rerail a loaded mine car. It is true that, in many instances, rather than install a device by which a derailed car can be quickly placed on the track again, companies will maintain a squad of men styled "a wrecking crew."

Allow me to present a type of rerailer that may prove of interest to the readers of *Coal Age*. It is shown in the accompanying sketch.



The device possesses the advantage over that shown in the article to which I have previously referred, in that it presents an incline plane for the wheels to travel and by which they are elevated to the level of the top of the rails. This is

the case both outside of the track and between the rails, so that both wheels of the car climb the rails readily.

The rerailer shown on page 777 appears to have no means of assisting the carwheels to climb the rails. The wheel outside of the track would be wedged into the crotch formed by the guide rail where it bears against the track rail. At the same time, the wheel inside of the track would be forced against the opposite rail. Both wheels would have little tendency to climb the rails, which appears to condemn the use of such a device. NOVA.

Montreal, Canada.

Assistant Mine Inspector

Letter No. 3—I have noted with interest the arguments put up by Samuel Jones, of Madera, Penn., in favor of the creation of the office of assistant mine inspector, *Coal Age*, May 19, p. 884. In my own defense, I want to say that Mr. Jones has based his arguments on a full quota of assistant inspectors in the bituminous district, which would mean 30 assistant inspectors, while the bill presented to the state legislature and mentioned in my previous letter, Mar. 31, p. 572, calls for the appointment of but 25 assistant inspectors, in the anthracite region. Also, these assistant inspectors were to be paid a salary of \$2000 per annum, instead of the \$1500 stated by Mr. Jones.

Replying to his inquiry as to whether a mine would be better officered by placing it in the charge of two mine foremen, instead of a mine foreman and a sufficient number of assistant foremen to help him in the discharge of his duties, let me say that where a mine is double-shifted there should be a bona-fide foreman in charge of each shift. Perhaps, I have failed to grasp the point of Mr. Jones' question.

I might, in turn, ask my friend if he thinks that a bill providing for the appointment of assistant mine inspectors in the bituminous district, as was contemplated by the bill relating to the anthracite region, would have the practical effect of reducing the accident rate in the bituminous mines and minimizing the chances of those fatal occurrences that have made so many widows and orphans in our state.

I might ask, also, with an examination rating of 75 per cent. for assistant mine inspectors, where could we look for efficiency in the inspection of the mines? I am afraid that we would be startled, time and again, by those dread catastrophes that have, in the past, sacrificed so many lives in our mines. I will not ask for an answer to these questions, but am willing to leave thinking mining men to draw their own conclusions.

For myself, I still hold the opinion that where it is a physical impossibility for a first-hand inspector to perform the work in his charge, a redistricting of the mines is necessary, in order that each district shall be in charge of a single inspector who has passed an examination in which a rating of 90 per cent. was required.

The coal-mining industry, in this country, has advanced by leaps and bounds. In the last few years, it has outdistanced the ability of unskilled mine officials and requires, today, the highest efficiency in the mine inspection force, to whom we must look for safety in the mines. "A job that is worth doing at all must be done well" is an old maxim; and the man to do it must be thoroughly up to date in all of his qualifications.

West Leisenring, Penn. ROBERT W. LIGHTBURN.

Repair Supplies Reduce Cost

Letter No. 4—I was interested in reading the letter of Daniel M. Smith, *Coal Age*, May 5, p. 800, in which he relates an incident all too common in coal-mining experience. In that instance, the delay in ordering the material needed in a certain mine caused a serious interruption in its operation, the delay extending over a period of weeks.

There can be no question that such delays and interruptions of work must greatly increase the cost of production of coal, and it goes without saying that the more complete the supply kept on hand of such material as is constantly needed in the daily operation of a mine the more prepared will the company be to meet all emergencies that commonly arise.

On the other hand, it must be admitted that it is practically out of the question to keep on hand every repair part needed in the machinery and equipment of a modern mine. This is especially true in respect to electrical machinery, some parts of which the manufacturers themselves sometimes fail to have on hand when ordered. The fluctuation in price of material, also, offers a serious objection to keeping too large a supply of such material on hand at the present time. There are, however, certain important and vital parts that every resourceful mine official will do well to always keep on hand.

All practical mine managers and superintendents have learned to expect breakdowns of every description and know well the urgent need of quick repairs being made on such occasions. Breakdowns are quite common in the use of electrical machinery, such as coal-cutting ma-

chines, pumps, haulage and gathering locomotives, etc. It is of the greatest importance that this class of machines shall be kept in operation continuously and, to do this, it is necessary to have and keep on hand a good supply of those parts most likely to break or become worn and useless.

No efficient mine management can afford to run the chance of interrupting the daily production of coal by failing to keep on hand all essential repair parts of important machines in use in the mines. It will not do to wait until such repair parts are actually needed before placing the order. The need must be anticipated, so that the part will be on hand ready for use when required.

Many of the large coal-mining plants are equipped for making their own repairs, which can often be done with greater economy and dispatch than where it is necessary to order the needed parts from the manufacturer. Such mines are equipped with foundries, machine shops, forges and electrical departments, which are kept constantly busy making and repairing equipment used in the mines.

One mistake that is frequently made is to keep in use too great a variety of machines—machines of different types and sizes, for performing the same work in the mine. The parts of these machines not being interchangeable, it becomes necessary to keep on hand an extra supply of repair parts to fit the different types and sizes of machines.

The supply of material for mining machines will be greatly reduced and simplified by adopting a standard for each kind of machine employed in the mine wherever this is practicable. It is not probable that more than one of these machines would be out of commission at one time and, the repair parts being interchangeable, it is clear that a much less number of such parts will be required to be kept on hand.

It is true that the size and capacity of pumps may vary according to the work they must perform. Likewise, also, locomotives of different sizes may be required for different work; but, as far as practicable, standard sizes and types should be employed so that their repair parts will be interchangeable. Such a standardization of equipment will be found a large item in cost reduction. It will doubtless, also, afford the advantage of getting quantities of repair parts at a lower cost than would otherwise be possible.

W. H. NOONE.

Thomas, W. Va.

Need of Drawing Timber

Letter No. 4—In my opinion, it is a great mistake to let props stand unbroken in the goaves, in longwall work, as suggested by Edward Jones, *Coal Age*, May 12, p. 845. When one realizes how miners are permitted to run their places in many longwall mines, it is clear that too little attention is paid to obtaining a uniform and steady settlement of the roof, which is an important factor in successful longwall work.

From what I have seen of longwall work in this country, I am led to believe that there is an unwarranted waste of timber in the mines and too much rock is brought to the surface and dumped when it ought to be used for building packwalls.

The following instance will serve to illustrate my meaning: In a certain mine the work on the south side of the shaft produced a large amount of refuse. From

18 in. to 2 ft. of mining dirt and drawslate afforded more material than could be stowed in the goaves, and the surplus was hoisted to the surface and dumped. It so happened that there was a scarcity of waste material on the north side of this mine and, in order to make up for this deficiency, much timber was used for building cogs, which were spaced at intervals and took the place of packwalls, as far as this was possible. The result was, however, that the weight was unevenly distributed and the roof broke around the cogs. The effect on the working face was to crush the coal in places so that it fell in thin slabs, while in other places there was little or no pressure to break the coal, and the mining was difficult.

It is quite evident that this place was poorly managed. The surplus material on the south side of the shaft should have been taken to the north side and used for building packwalls. This would not only have decreased the cost of timber, but given better results than could possibly be obtained by building timber cogs. Also, much trouble was caused by some of the places falling behind. It would have been better to have double-shifted those places in order to keep the face in a uniform line.

The articles of agreement between the operators and mine workers read in part as follows:

The miner shall build 4 yd. of wall at each side of his road and, if he has more rock than is required for that purpose, he shall not load any of it until he has filled his place therewith. In case the miner has not rock enough to build his 4 yd., he shall, at the request of the company, begin his wall 4 yd. from the roadside, provided that the above shall not prohibit the miner, at his option, from beginning his wall at any greater distance upon the request of the company.

In most instances, however, miners do not care to do any extra work and build their packs 4 ft. inside of the road and leave the gob empty. The management, in such cases, should compel the miner to fill his place tight with what rock he has and then build the packs on night shifts, so as not to interfere with the loading of coal.

If miners were given to understand that a little extra work on their part in packing their places tight with the waste would result in easier mining and make the coal break better, they would be more willing to fill the waste full with their refuse. This would make the settlement of the roof more uniform and yield better coal.

A little thought will convince a practical man that it will cost no more to unload a trip of cars filled with refuse and stow this in empty places where it is required for packs, than to hoist the cars to the surface and dump them on good ground. I have worked in a number of longwall mines in this part of the state, and in one place only has the mine manager (foreman) insisted on having the waste space well packed and filled with the refuse of the seam. In none of these places have I been instructed to leave no standing timber. As I have said, this seems to me to be a mistake. FOREIGN MINER.

Peru, Ill.

Making Up Cartridges in Mines

Letter No. 9—I understand this subject to refer to the use of black powder for blasting in mines, and fail to see how we would be following safety-first methods by allowing miners to take powder to their homes for the purpose of preparing their cartridges for the next day. It is certain that if a miner is careless in the use of powder in the mine, he will likewise be careless in handling the explosive at home.

Neither can I understand how it is possible for a miner to prepare a cartridge of the proper length, without first seeing the hole in which it is to be used. This is particularly the case when coal is to be shot off the solid, as the miner must then use his best judgment in determining the weight of charge required to break down the coal.

It seems to me that the mining laws and mine regulations are not sufficiently strict where men are permitted to take a 25-lb. keg of powder into the mine, or to use newspaper to make up their cartridges. One or two writers have mentioned the making of cartridges the full length of a newspaper, which is certainly a dangerous practice and ought to be condemned.

I recall an incident that occurred some time ago in a mine in Utah, where a miner had just finished a newspaper cartridge of this kind when the inspector entered his working place. It so happened that the paper cartridge broke and the powder spilled. The inspector, observing what took place, then and there made a rule condemning the use of newspaper for that purpose and recommending the use of glazed blasting paper, prepared especially for making up powder cartridges.

In this connection, let me quote from the coal-mining laws of Utah, Sec. 1518, a part which reads as follows:

10. Gunpowder or any other explosive shall not be stored in a mine, and a workman shall not have at any time, in any one place, more than one can or box containing 6½ lb. of powder; provided that under special conditions a larger amount may be allowed in a mine for immediate use, when approval of such action is made in writing by the state inspector.

At one of the mines in this state where I worked, and where all the coal is blasted off the solid and black powder is used, strict regulations are enforced in respect to blasting. The rules in this mine provide that no hole shall be charged with powder when the depth of the hole is less than 2½ ft. or exceeds 5 ft. The hole must be placed at an angle not exceeding 45 deg. with the working face. In entry work the coal must be mined to enable a center hole to perform its work, and side holes or rib-shots must be placed at least 6 in. from the rib and not extended more than 6 in. beyond the mining. The cartridge for a single blast shall not exceed 16 in. in length and must be made on a stick ¾ in. in diameter. The miners are allowed but one can of powder containing 6½ lb. On arriving at his working place, the miner must place this can of powder in a wooden box, which is then securely locked. I have never heard of an accident occurring from the handling of powder in this mine, during the 10 years I have worked there.

Speaking of accidents that occur through the handling of powder by miners in their homes recalls one that happened in the mining village of Barnsley, England, some years ago. In that case a father and son were employed to blast rock in a mine. One night the father took a quantity of powder home with him in a block-tin box. In the morning he spread out the powder on a flat tin and placed it before the fire to thaw out. While the two men were putting on their mining clothes the powder ignited, and the explosion that followed killed both of them, the wife and mother barely escaping the same fate. This and similar accidents that have happened from time to time should be sufficient to condemn the practice of miners taking powder to their homes.

MINER.

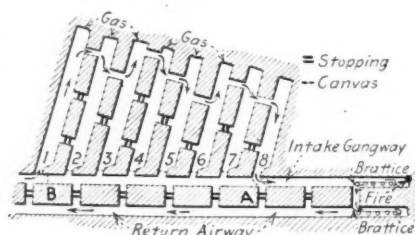
Carbon County, Utah.

Inquiries of General Interest

Extinguishing Fire in a Gassy Mine

A question that has aroused considerable discussion at different times in this vicinity is, What is the proper method to adopt in attempting to extinguish a mine fire that has gained some headway at the face of an intake heading, assuming that gas is generated at the faces of the rooms driven off this heading?

As I recall it, the case proposed for discussion some time since, at a meeting of mine officials, is illustrated in the accompanying sketch, which shows eight rooms



driven at a slight angle from the pitch of the seam on the rise side of the gangway. It is assumed that gas is being generated at the faces of six of these rooms, which are supposed to be approaching a fault line. It is also assumed that a gas feeder has been struck at the face of the intake heading when the last shot was fired, and that this feeder was ignited by the flame of the shot and burned in the coal for some time before being discovered.

The figure shows a canvas hung on this heading just inby of the mouth of the first chamber, by which most of the air current was deflected to the working face and passed through the crosscuts near the head of each chamber, as indicated by the arrows. A canvas was also hung at the mouth of each chamber, except the first and the last. I would like to see this question discussed in *Coal Age*.

FIREBOSS.

Wilkes-Barre, Penn.

The figure shows that lines of brattice were used to deflect the air current to the faces of both the intake and return headings. This is immaterial, however, to the discussion of the question, which is a very practical one and which we hope will be taken up and thoroughly ventilated by our practical foremen and firebosses.

Let it be assumed that the fire is first discovered by the fireboss when making his morning rounds and that the feeder of gas is not strong but burned quietly, so that the fire was confined to the face of the intake heading at the point marked by the dot in the figure. Let it be assumed that the fire has not been communicated as yet to the brattice and that the quantity of air in circulation is sufficient to dilute the gas generated in the chambers, so that the current is below the inflammable point, although it would be dangerous if the gas was allowed to accumulate or the volume of air reduced.

The point to be discussed is, What method should be pursued in attempting to extinguish this fire, in order

to avoid an explosion of gas? It is assumed that the coal at the face of the heading has become ignited and that the heat of the fire is such that the brattice is expected to take fire at any moment, at a distance of 10 yd. back from the face. These and other conditions may be assumed at will by contributors.

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Mine-Haulage Proposition

We are operating a seam of coal $4\frac{1}{2}$ ft. in thickness, which pitches about 4 deg. At the present time, the mine is opened by a level driven on the strike of the seam, from a point 700 ft. from the tippie. A surface track or tramway runs from the tippie to the mine entrance. This track has a light grade against the loads, making it necessary to haul the coal upgrade from the mouth of the mine to the tippie.

We propose to make a new opening by driving a level in direct line with the tippie, as shown in the accompanying sketch, and build

an incline or slope from the mouth of this opening to the tippie. It is proposed further to connect the new level with the present entry, by driving a cross-entry on the full pitch of the seam, and to open rooms to the right and left of this entry, as shown in the drawing.

In this proposed arrangement, the coal from the rooms will be lowered down the pitch, by gravity, to the lower level, hauled to the foot of the slope and then up the incline to the tippie. The empty cars will be run by gravity from the tippie to the mine opening on the present level, pushed along that level to the head of the cross-entry and lowered to the rooms where they are to be loaded. The grade on this entry is a 4 per cent. grade.

What I desire to ask is, Whether this scheme is practicable and, if so, what system of haulage could be used for lowering both the loaded cars and the empties down a 4 per cent. grade on the cross-entry? Can someone among *Coal Age* readers give us a method that will be both safe and economical, or suggest a better scheme for working this coal?

OPERATOR.

Saunders, Alta., Canada.

Coal Age gladly presents this proposition for solution and invites the suggestions of its practical readers. It can be assumed that the scale of the accompanying figure is practically 400 ft. to the inch. The discussion of these questions that arise in practice has proved of great help to many readers, and we hope for a ready response.

Examination Questions

Miscellaneous Questions

(Answered by Request)

Ques.—Give the names, chemical symbols and composition of the different gases met with in coal mines.

Ans.—The common mine gases are the following: Methane, or marsh gas, called also light carbureted hydrogen (CH_4), is composed of one atom of carbon united with four atoms of hydrogen; carbon monoxide (CO), composed of one atom of carbon united with one atom of oxygen; carbon dioxide (CO_2), composed of one atom of carbon united with two atoms of oxygen; hydrogen sulphide, or sulphureted hydrogen (H_2S), composed of two atoms of hydrogen united with one atom of sulphur.

Besides these may be mentioned olefiant gas (C_2H_4), which is composed of two atoms of carbon united with four atoms of hydrogen; ethane (C_2H_6), composed of two atoms of carbon united with six atoms of hydrogen; and nitrogen (N_2) and oxygen (O_2), the chief constituents of the atmosphere, and hydrogen (H_2), which is of rare occurrence, except as a product of explosion.

Ques.—State how you would commence to move a large body of firedamp and what precautions you would take. State what danger there would be in doing the work.

Ans.—Before making any attempt to disturb or remove the gas from the place where it is lodged, the men must be withdrawn from the return of the air current passing the place. The men should also be withdrawn from the adjoining places on the intake side, whenever there is danger of the gas being driven back onto their lamps.

Having withdrawn the men, the next step is to increase the circulation of air in that section. Only experienced and competent men must be employed in this work, which must be conducted from the intake side. It is important to protect all entrances to the return current so as to prevent anyone from entering the return airway. It is hardly necessary to state that only safety lamps must be used in performing the work necessary to remove a body of gas.

The method of proceeding will depend largely upon the conditions surrounding the place. It will generally be necessary to erect brattice to deflect the air current so as to cause it to sweep the place where the gas has accumulated. The work must proceed slowly and time be given for the air current to sweep away the gas. As this is accomplished, the brattice is extended a few feet at a time, until the entire place is clear of gas.

Ques.—Are there any conditions under which it would not be safe to use a safety lamp? If so, name them.

Ans.—A safety lamp is not safe except when properly used by a competent person. It is never safe to expose a safety lamp to a body of sharp gas longer than is necessary to ascertain its presence; neither should a lamp be exposed to a strong air current or blast of air. A safety lamp is unsafe when the gauze is dirty or imperfect, or

when the lamp is improperly assembled, or any of its parts missing. It is unsafe to hold a safety lamp in other than an upright position.

Ques.—What is meant by splitting the air volume and what advantages are to be derived therefrom?

Ans.—The air volume is split in a mine when the air current is divided one or more times, so that the mine is ventilated in as many ventilation sections, or districts, as there are separate splits or currents. The main air current enters the mine usually at a single opening called the "intake" and is divided at one or more points on the main entry. These separate currents are again united in the main return airway and are discharged from the mine through a single opening.

The advantages of splitting the air current are the following: A larger quantity of air is circulated by the same power; the ventilation of the mine is under better control, since the air can be divided between the several districts of the mine according to the requirements in each district; any trouble occurring in one district of the mine does not require the shutting down of the entire mine, or an explosion in one district is not necessarily felt in other districts of the mine; better air is supplied at the working face, since the smoke and gases generated in one section are not carried into another section of the mine, but are conveyed directly into the return air current; also, the velocity of the air passing the working face is much reduced, giving more comfortable working conditions at the face than where the entire air volume circulates in a single current.

Ques.—Describe how you would construct a good cheap durable brattice in breakthroughs on entries and in rooms.

Ans.—All brattices or stoppings on the main roads and airways should be built in a substantial manner. They should be constructed of incombustible material, and brick or concrete is generally the best and most available material of this kind. The stoppings should be of sufficient thickness to resist the pressures to which they may be subjected by the settlement of the roof or any ordinary concussion of the air, due to blasting or a local explosion of gas or dust. These stoppings should form a close joint with the ribs, roof and floor of the opening. It may be advisable to recess the stopping in each rib to a slight depth so as to form a good joint.

The stoppings in the crosscuts on the side entries and in rooms are not as important as those on the main roads, because they are only temporary. The entry stoppings, however, should be well built, using either brick, concrete or slate and other mine refuse, according to the importance of the work and the length of time it must endure. In constructing a stopping of rock or slate, a double wall is generally built up of this material, leaving a 6- or 8-in. space between the two walls, which is filled with the fine dust taken from the roads or with clay. It is frequently necessary to plaster the outside walls and joints with clay to make the stopping air-tight.

Coal and Coke News

Washington, D. C.

Hard pressed as is the United States for coal miners, the impression seems to prevail in Washington among those familiar with the coal-mining industry that sufficient advantage is offered to justify the dispatch of volunteer detachments of coal miners to work in the mines of France. While numerous obstacles must be overcome to make this plan a reality, there is reason to think that it can be done.

Production of coal in France is being handicapped by the lack of miners. A further drain on the supply of French coal miners has been occasioned by the recapture of areas containing coal mines. Before abandoning these mines, the Germans did everything in their power to make their reopening tedious and difficult. The rehabilitation of these mines calls for a large number of skilled miners. By introducing American miners, many believe a service can be done which is far greater than placing an equal number of men on the fighting front.

France is consuming in excess of 60,000,000 metric tons of coal annually. Under normal conditions, it is necessary for France to import 20,000,000 metric tons. With three-fourths of its coal mines in German hands and with the demand for coal far greater than ever, the amount of coal it is necessary to import has reached a high figure. Because of the scarcity of labor, it is not possible to work to full capacity the coal mines in possession of the French. There are several deposits which can be opened if labor can be obtained.

Urgent necessity exists for the release of the numerous vessels now being used to transport coal to France. This means of adding to shipping, which will be available for other purposes, was presented to the United States Government by the French Commission on the occasion of its recent visit to this country.

The principal objections to the plan are that the United States has an insufficient number of miners to produce the coal urgently needed at home and that the use of American miners in French mines at much higher salaries than are paid to native miners is likely to cause labor disturbance.

Pooling of tidewater coal, in essentially the same manner as that agreed upon for handling Lake cargo coal, was assured after a preliminary discussion of the matter in Washington, May 31. At the call of the Council of National Defense coal operators met with the National Defense Committee of the American Railway Association and the Committee on Coal Production. Francis S. Peabody, the chairman of the Committee on Coal Production, presided at the meeting and set forth the essential issues. Arrangements were completed for the adoption of a permanent organization and the appointment of a permanent committee at later meetings.

To supply an urgent need of the committee on coal production, the U. S. Geological Survey will begin next week to issue a weekly report on coal production. Heretofore, the Survey has published such a report each month. Under the stress of present conditions, however, it has become imperative to have figures showing the production each week.

Through the active co-operation of the operators, coal trade associations and bureaus and the railroads, it has been found possible to issue such a report as will show actual production up to a few days prior to issuance. In order to make possible such an early statistical compilation, it will be necessary to disregard about 10 per cent. of the production. Prompt returns can be had from about 90 per cent. of the production, which will give a sufficiently accurate idea to serve the purposes of the coal committee in its effort to be exactly abreast of each week's output. The first of these new reports will cover the week ending June 9. The report will be compiled under the direction of C. E. Leshner.

The Campbell's Creek Railroad Co. is entitled to receive a division on coal delivered to the Kanawha & Michigan Ry., figured upon the basis of a mileage prorate

of 28 miles, or 200 per cent. of the actual mileage of its line, according to an opinion rendered by the Interstate Commerce Commission. The Campbell's Creek R.R. is a line 14 miles long, running from Putney to Dana, W. Va. Coal furnishes 98 per cent. of the traffic on the road. The decision makes necessary the payment by the Kanawha line the divisions on this basis since July 1, 1915.

Sulphur-bearing coals are receiving close attention by Government specialists in the efforts being made to replace from domestic sources the sulphur obtained from Spanish pyrites when the imports of this material were normal. If the careful attention of operators and workmen in the districts where sulphur occurs with the coal can be obtained, it is believed that a material addition can be made to the domestic sulphur production. Much of the sulphur-bearing coal, which is sorted out at present, is being wasted.

Every mining company in the United States will receive within the next few days a letter from Franklin K. Lane, the Secretary of the Interior, urging the companies to encourage the maintenance of a garden by the family of each of their employees.

Mr. Lane suggests that the offering of prizes by the company, the supplying of fertilizer and seeds, either free or at cost, and the making of provision for the plowing of the ground at actual cost, are some of the ways in which the movement can be forwarded.

"War today is as much a matter of food supplies as is actual fighting in the trenches," says Mr. Lane in his letter to the mine operators. "The man, woman or child, who raises enough vegetables this summer to feed the family, places at the disposal of the men at the front, who are fighting for a world democracy, just that much food. It is suggested that those who join this garden movement shall place in their garden an American flag as a reminder that he who serves his country in this capacity serves the flag."

The letter is being accompanied by the Department of Agriculture's bulletin, "The Home Vegetable Garden."

Purchase by the Government of the Tanana Valley R.R., a privately owned line in Alaska, insures the prompt development of the Nenana coal field, it is believed by officials here. The price of wood in the Fairbanks region of Alaska has reached a point where it is almost prohibitive. Supplies of this fuel are being brought great distances and even then the quantity available is limited. When the mining experiment station was located at Fairbanks, it was anticipated that one of its chief problems would be work on the fuel question. The purchase of this railroad will simplify matters greatly. The Nenana coal field is 100 miles south of Fairbanks.

Means of co-ordinating the work of the Committee on Coal Production with that of the Committee on Oil and Gas were discussed at a joint meeting of these committees last week. Pending the adoption of a definite program, no announcement as to the steps being considered will be made.

HARRISBURG, PENN.

Practically all of the big operators and many of the smaller ones throughout Pennsylvania are notifying the bankers and bond salesmen in their communities who have charge of the Liberty Bond campaign that they will do all in their power to help make the campaign a success. The companies will urge on all their employees the necessity of the success of the bond sales in order that the United States may win the war, the patriotic duty of the men to purchase the bonds and the absolute safety of the bonds as an investment as well as their desirability.

The coal operators are also impressing on the men the fact that since in selecting the armies of the nation miners will be in a large measure exempt because of the need of a maximum coal production, the miners should do "their bit" by subscribing for the bonds. They may be paid for in easy payments out of future earnings, the men thus really putting money into their pockets.

Many of the operators have offered to buy the bonds for their employees and deduct from \$1 to \$2.50 from each semi-monthly pay.

Governor Brumbaugh has approved the bill introduced by Senator W. E. Crow, authorizing tenants in common or co-partners in the ownership of land to pay their proportionate share of the taxes assessed against such land, and providing that the sale of the land for unpaid taxes shall not impair or divest the title of those who have paid their share of the taxes.

The bill has been closely followed by bituminous coal people, inasmuch as it was intended to meet such a condition as has arisen out of the financial embarrassment of J. V. Thompson. A large number of persons are joint owners with him in numerous tracts of coal land in Washington, Fayette and Greene Counties upon which no taxes have been paid. The practice of tax collectors under existing laws has been to refuse to accept partial payment of taxes assessed against property owned jointly by more than one person.

The new law will make it obligatory upon tax collectors to accept payment of each co-owner's proportionate share of taxes and by such payment the title of the tax payer will not become impaired or divested in case the property is sold for taxes which other co-owners neglect or refuse to pay.

Senator Frank E. Baldwin, chairman of the mines and mining committee, is urged in a resolution received from the district officers of District No. 2 in the bituminous region, to release from committee the bill amending the weights and measures law, as affecting the weighing of coal at mines. As this weight fixes the pay of miners generally throughout this district, its regulation will have some effect upon compensation for disability. The amendment is intended to clarify the situation with regard to computing compensation for injury where the earnings of miners is a basis.

Action upon the revenue program that has been put before the Senate is likely to be taken shortly. The program is of special interest because it involves the fate of the coal-tax bill. This bill is important not only because it will impose a tax upon anthracite and bituminous coal, but also because half of the amount of the tax collected will be returned to the producing community to be used for municipal purposes or for surface support.

It became generally known last week that the bills taxing coal, oil, gas and petroleum would not be reported out of the senate committee. On behalf of these measures the Pennsylvania State Grange is now using its influence to have them go through the Legislature. The situation with respect to the coal tax has been regarded as so generally hopeless that its proponents have offered in compromise to make this tax effective for only two years.

Senator Salus has introduced a bill authorizing the lease and sale of natural resources of the Commonwealth to the highest bidders.

The real purpose of the bill is, it is said, for the state to get control of the coal under public streams and to obtain better prices for it in the future.

The Siggins bill, covering 250 pages, containing no new laws, but simplifying the laws governing townships by repealing inconsistencies and straightening out many kinks more than a half century old, has passed the house, but its experience in the senate committee has resulted in the inclusion of many amendments.

Northeastern Pennsylvania coal interests are charged with weighting the bill down to cover certain conditions. This situation is laid directly to the conditions in certain townships rich in coal lands, especially in Hanover Township, of Luzerne County. This is said to be the richest municipal division of its kind in the country. In this township, 98.5 per cent. of the taxes are paid by two corporations, the Delaware, Lackawanna & Western R.R. coal department and the Lehigh & Wilkes-Barre Coal Co. The other 1.5 per cent. of the total tax is paid by individual surface

property owners. The tax collector in this township gets the two big checks annually without trouble, and takes out his 5 per cent. commission.

This year the coal companies have maintained representatives at the capitol to watch township legislation. When the Siggins bill reached the senate committee, a proposal to reduce the commission of township collectors was made part of the bill. The Hanover collector is said to net over \$15,000 annually in commissions for the collection of two checks from the coal companies. Several other amendments are made to meet conditions in the anthracite region and several more, it is said, will be made by bituminous interests.

PENNSYLVANIA

Anthracite

Pittston—Coal is burning in the old workings of No. 8 colliery, Pennsylvania Coal Co. It is thought to have started from a camp fire built by tramps who got in through a cave hole.

The half-acre garden of Thomas Tracey, health officer of Pittston City, was recently destroyed by a mine cave, which partly engulfed the plot.

Hewing to the national policy to have as few holidays as possible these war times, collieries of the Upper Anthracite field worked on Registration Day, June 5. A number of local industries shut down for the day, but no perceptible shortage of mine workers was reported.

Archbald—At a special meeting of the Accident Association of the Archbald Coal Co. with more than 150 members of the organization present, a resolution was adopted directing the association to subscribe for \$1500 worth of Liberty Bonds.

West Scranton—While Mrs. Theodore Barton was pulling weeds in her garden on June 1, the ground suddenly gave way under her and she landed in an old abandoned mine gangway 18 ft. below. A number of neighbors heard her screams for help and rescued her after considerable hard work.

Scranton—Despite the fact that some 50 societies have made application for dates for excursions and picnics to Lake Ladore, one of the most popular summer resorts in the anthracite region, the Delaware & Hudson Co. has decided to make no more reservations and to run only those excursions scheduled thus far for the month of June. This is in accordance with the request of the National Defense Council for the conservation of fuel, labor, etc., and the avoiding of congestion of freight traffic.

Carbondale—The Delaware & Hudson Coal Co., has offered several large pieces of land on the west side to the people of this city to be used for garden purposes. The offer was made through the garden committee and it is through its effort that the concession was obtained. The company first offered any vacant space that could be tilled to its mine employees. Many of them took advantage of the offer and what now remains is to be given to the townspeople.

Jeddo—Announcement has been made by the G. B. Markle Co., the largest individual mining firm in the anthracite region, that its foremen, office employees and other unorganized hands have been granted a wage increase corresponding to that recently given the mine workers and effective from May 1.

Bituminous

Washington—The Chartiers Creek Coal Co. recently sold 400 acres of coal in North Strabane Township to the Pittsburgh Coal Co. The price paid was approximately \$265,000. Ten farms comprise the tract included in the deal, all of which are located near Canonsburg.

Pittsburgh—At a meeting at the Councilmanic Finance Committee recently, a motion was adopted asking Controller E. S. Morrow to prepare an ordinance for a \$100,000 councilman bond issue to provide means for municipal coal mining on a large scale at Mayview.

Johnstown—The Berkey-Beabes coal organization has completed its new coal plant in the Walnut Grove section, and plans for immediate shipping of coal. Four seams have been opened.

Fire, May 29, destroyed the power plant of the Morrellville Coal Mining Co., Morrellville, used for mine haulage work. During rebuilding the company will secure electric service from the Citizens Light, Heat and Power Company.

The Berwind-White Coal Mining Co. has increased the wages of miners about 10c. per ton, making a total of about 95c. per ton in mining at the company's properties at Windler, St. Michael, and neighboring

sections. In addition the men will have an 8-hour instead of 9-hour day.

WEST VIRGINIA

Bluefield—It is reported that within a short time two beds of coal will be worked in the Green Sulphur district. This will be the first commercial mining in Summers County. Both openings will be made on the property of the Beury heirs. The tipple will be on the Sewell Valley R.R., near Claypool. Work on the construction of the incline is practically completed.

Charleston—Many deals for coal property and operating mines have been closed recently at Logan, Kanawha, Fayette, McDowell and other counties in the southern part of the state. Many buyers and consumers of coal here produced have been unable to close contracts for their fuel needs covering the next six months or a year, and as a result they have gone into the market and are offering large prices for operating mines. One of the latest and most important deals closed was that by which J. K. Vest and others, sold for \$450,000 a tract of 900 acres in Logan County. This tract contains the mines of the Island Creek Colliery Co.

Fairmont—A bath house completely equipped with shower baths and steel lockers, with accommodations for a large number of men, has been authorized by the Monongahela Valley Traction Co., to be built at once at its Baxter mine. Bath houses are not common in West Virginia.

Clarksburg—Lake shipments are reported to be one million tons short of shipments at this time one year ago, and West Virginia operators who ship largely to this market cannot see any let-up in prospect for the summer or fall. It is believed that in spite of the many new mines which are opening throughout the state, production will hardly reach the 100,000,000-ton mark this year. The chief difficulty in opening new mines is in getting material, equipment and men.

ALABAMA

North Birmingham—After an idleness of several years, the Thompson Mine of the Republic Iron and Steel Co. is being cleaned up and placed in shape for operation. This is a slope mine on the Pratt seam, near North Birmingham, and is reached by the Birmingham Southern R.R.

Birmingham—Announcement is made by the Tennessee Coal, Iron and Railroad Co. that it will construct a large four-story general hospital on Flint Ridge, between Ensley and Fairfield at a cost of approximately \$425,000. The building will consist of a main structure and two wings and will be modern and complete in every respect. It is designed for caring for employees of the company, both from a medical and surgical standpoint. The location is ideal, and is easily and quickly reached from the steel plant, byproduct plant and coal and ore mines of the company. It is understood that construction of the new building will be begun at once.

Corona—A small tonnage of coal is now being removed from the new drift mines of the Corona Coal and Iron Co., near Corona, Walker County. Coal is being dumped over a temporary tipple, the permanent structure of steel and concrete not being ready for use for some time yet. It is planned by the company to eventually open about 40 drift mines, the output of which will be dumped over this central tipple structure.

Montevallo—The Montevallo Mining Co. is arranging to eliminate loss of time at its mines on account of inadequate car supply by installing a derrick by which the cars of the company may be tipped over and unloaded on a stock pile. This company employs a number of convicts, and aside from the urgent demand for its high-grade domestic product, enforced idleness is a costly element in the compensation for convict labor.

KENTUCKY

Barbourville—Some of the larger local coal consumers are making preparations to open and operate their own coal mines in an effort to meet the prevailing high prices. The Barbourville Brick & Tile Co. has formed a subsidiary coal company to operate a mine while the Barbourville Electric Light and Power Co. is starting to operate its own mines.

Louisa—A movement is being organized among the mine operators in the Slackwater District of the Big Sandy River to ship coal by river. Completion of the Ohio River dam above Ashland, has created a stage in the Big Sandy which will make it possible to handle coal by barge. If a sufficient tonnage can be assured a barge line trade will be established.

Whitesburg—Reports are encouraging from the Elkhorn and Boone's Fork coal fields of this (Letcher) county. The car situation is freer. Operators are better served than for several months passed.

A party of officials of the Louisville & Nashville R.R., including General Manager B. M. Starks and others, recently made a tour of inspection over the North Fork Branch of the L. & N. into the eastern Kentucky coal fields with a view to making a number of much-needed improvements at once.

A number of the coal field towns were visited by a severe windstorm on the evening of June 1, which did great damage in unroofing of miners' houses and partially wrecking the buildings. A number of the power houses were considerably damaged. Other damage was done, especially to wire service which has hampered mining considerably. According to inhabitants this was the worst storm ever experienced in the eastern Kentucky coal fields. The damage was especially severe in the little mining town of Kona, where the residence of the manager was almost completely wrecked. A number of buildings in the town were unroofed and otherwise damaged.

ILLINOIS

Marion—Charles A. Gent of Chicago has purchased the N. W. Robertson farm, near here, with the purpose of operating a strip mine. The price paid is said to have been \$20,000. The land is underlain by a bed of coal of 7 or 8 ft. in thickness, only about 20 ft. under the surface.

Springfield—The State Mining Board, on account of the conscription registration on June 5, has postponed, from June 4 to June 11, the examination for mine managers, examiners and hoisting engineers. The Board has announced the following itinerary: Duquoin, June 9; Spring Valley, June 14; Canton, June 15; Peoria, June 16; Breese, June 19; Belleville, June 20; Staunton, June 21; Pana, June 27; Springfield, June 28.

Action that will force down the price of coal was demanded at the recent meeting of the committee on food and fuel of the Illinois State Council of Defense. The plan of action is to force absolute state control of production and distribution during the war. It was charged that a conspiracy exists among the operators in the Illinois field as to prices and distribution, and it is the intention to make the producers show books and thereby ascertain the actual cost and a reasonable selling margin.

Edwardsville—A compilation has been made which shows that in the seven years preceding the present year the coal output for Madison County was 25,530,635 tons. At the average price of \$1.10 a ton the valuation was \$28,083,698.50. To move it 638,265 cars were needed. The trains which hauled it would extend over a distance of 4900 miles. In the seven years 73 miners were killed in the Madison County mines. One life was lost for each 8,743,382 bushels mined. The Madison County output will be materially increased this year by the more steady operation of the old mines and the opening of new ones.

Royalton—The north mine of the Franklin County Coal and Coke Co. which has been shut down for the last month to erect a new steel tipple, is in operation again. The original tipple for this mine was destroyed last August and a temporary wood structure has done the service since. The new tipple will give at least 1000 tons per day more capacity.

Alton—A movement has been started to relieve car shortage next winter by forming neighborhood groups throughout this section to hire auto trucks and have their coal cellars filled during the summer, when the roads are hard. The suggestion has elicited favorable response and it is probable that the plan will be worked out.

Hallidayboro—In the tornadoes which swept over the State of Illinois on May 26 and 27 the tipple of the mine at Hallidayboro was blown down, causing that mine to suspend operations until this structure can be rebuilt. At Willisville the property of the Willis Coal and Mining Co. was severely damaged and many of the buildings entirely demolished. At Marion and Johnston City many of the mine tipples and out-buildings were partly wrecked, but with the exception of Hallidayboro and Willisville there was no suspension of operations.

Herrin—Nine bodies were recovered on June 3 from the mine at this point, in which an explosion occurred on the night of June 2. Two men were removed from the mine alive, but are in a serious condition. Reports circulated shortly after the explosion to the effect that 16 men had been entombed were false, as the five men at first

reported as missing have been accounted for. It is supposed that the workmen entered abandoned workings, where gas was found. Little damage was done to the mine by the explosion, and no fire followed.

Foreign News

Saint Nazaire, France.—The fuel shortage in France has directed attention to extensive peat bogs, heretofore despised. These may aid as much in solving the fuel problem of France as the lignite deposits in the center of the country, provided the question of labor can be satisfactorily solved. The Grande-Briere and the region of Culoz, according to expert estimates, hold 80,000,000 tons of dried peat of about half the heating power of coal. Considering the ease of production, it is believed that one workman can extract a quantity of peat which will contain a much greater heat content than the coal produced by one miner.

Personals

G. E. Land has been recently appointed advertising manager of the Blaw Steel Construction Co., of Pittsburgh, Penn.

F. W. Foedisch of F. W. Foedisch & Co., Pennsylvania Building, Philadelphia, Penn., coal operators, is visiting the company's properties in the bituminous fields.

Charles Robertson, formerly in charge of the Jefferson and Indiana County fields in the mining department of the Continental Casualty Co. has resigned to accept a position in the auditing department of the Rochester & Pittsburgh Coal and Iron Co., at Punxsutawney, Penn.

C. M. Morderwell, of Chicago, representing Illinois and Indiana on the National Fuel Commission, has sold all his holdings and retired from the coal business in order that he may give his entire attention to the business of the Commission.

Obituary

August F. Klasing, age 66 years, and president of the Pocahontas Mining Co. of St. Louis, died at his home there May 27. In addition to his coal mining interest, Mr. Klasing was prominent in banking and financial circles in St. Louis.

A. F. Yocum, 73 years old, died on June 1. In the last half century he had assisted in developing numerous coal properties in the Schuylkill region of Pennsylvania. During the Civil War he was a member of the 131st Regt., Pennsylvania Volunteers, and participated in numerous battles.

Abraham Lincoln Keister, former Congressman, philanthropist, coal and coke operator and banker, died recently at his home in Scottsdale, Penn., after a few days' illness, at the age of 65 years. At the time of his death, Mr. Keister was president of the Scottsdale First National Bank, and also of the Lincoln Coal and Coke Co. He was unmarried.

John C. Bridgeman, one of the most prominent men in the business and mining world, died at Wilkes-Barre, Penn., on May 29. Death was due to heart trouble. He had not been in the best of health since last December, when a general breakdown, followed over exertion in his duties as president and general manager of the Hazard Manufacturing Co., makers of mine cables, etc. Mr. Bridgeman was aged about 55 years and was a graduate of Yale. He is survived by his widow and twin sons.

George B. Fritzius, aged 79 years, prominent in the manufacturing, mercantile, financial and business circles of Braddock, Penn., for more than half a century, died recently at his home in that city from pneumonia. In company with the late Benjamin Braznell, of Pittsburgh, he organized the first coal company with which Mr. Braznell was connected, this being the Stockdale Coal Co. He remained with this firm until it was merged with others about eight years ago. Mr. Fritzius retired from active business about two years ago.

Industrial News

Pittsburgh, Penn.—During the month of April the bituminous coal carried by the Pennsylvania R.R. east of Pittsburgh and Erie amounted to 4,461,030 tons, being an increase of 581,760 tons over March. The coke movement in April amounted to 1,077,893 tons, an increase of 176,519 tons.

Mauch Chunk, Penn.—The Lehigh Coal and Navigation Co., which has a contract with the Mauch Chunk Township road district to make and repair its roads, has erected a large stone crusher near Hackelbernie, and has a force of men at work macadamizing the road between Mauch Chunk and Summit Hill.

Charleston, W. Va.—Under a statute which has been enacted by both houses of the West Virginia legislature, every able-bodied citizen of the State must work at least 36 hours a week, under penalty of forced employment. The measure includes not only vagrants, but persons having incomes and without regular employment.

Charleston, W. Va.—Prohibition officers recently discovered in an abandoned coal mine of the Mud Sock company, at Montgomery, approximately 1500 gallons of contraband whiskey and other liquors smuggled into the state by bootleggers. Frequent visits of citizens to the shaft aroused suspicions, and the abandoned mine was consequently searched.

St. Louis, Mo.—By an agreement in the County Court at Belleville, Ill., the Interstate Railway Co. of Illinois has acquired 487.8 acres at the east end of the Municipal bridge for a belt line and yard purposes. The price paid is \$975,600, or \$2000 an acre. The owners wanted \$2500 an acre. A jury had been summoned to fix the value when the attorneys came to an agreement.

St. Louis, Mo.—Orders have been received here by Colonel Townsend in command of the Engineering Corps to assemble a fleet of 24 government barges together with the necessary tugs to take them from St. Louis to St. Paul. The boats are to be loaded with 15,600 tons of coal from the Illinois field and on their return from St. Paul they will carry 24,000 tons of iron ore for St. Louis smelters.

Brilliant, Ohio.—It is reported that there is a decided possibility of a large byproduct coke plant at this place and extensive development of the coal industry. It is said that a Cleveland firm is negotiating the purchase of the Brilliant coal shaft, and has been making investigations which lead to the belief that a byproduct coke plant will be established which will rival that of the La Belle Iron Works.

St. Louis, Mo.—Agents of the Illinois Central R.R. in this territory have received a letter from C. H. Markham, president of the road, stating that the road's answer to President Wilson's appeal for increased efficiency is a record-breaking movement of freight in the past month, with the freight trains averaging a length of 40 miles a day. He urges continued cooperation of employees in solving the car supply problem.

Washington, D. C.—In a tentative report recently made public in the Lake cargo coal-rate cases, the Interstate Commerce Commission proposes to leave undisturbed the existing machinery of rates on coal from mines in Pennsylvania, West Virginia, Ohio, Kentucky and Tennessee to Lake ports for trans-shipment. Shippers had attacked the rates as unreasonably high. Argument on the report will be heard June 14.

Frankfort, Ky.—The investigations into the high price of coal have reacted in the form of numerous petitions filed with the Kentucky Railroad Commission, in which small coal operators are asking that the commission compel the railroads to furnish them with cars. The small operators are complaining that the large mines are getting all the cars and that they are being compelled to let good orders go through inability to make deliveries.

Bluefield, W. Va.—It is stated that preliminaries have been concluded for the erection and maintenance of a calcium carbide manufacturing concern, the plant of which will be located near Ivanhoe, Va. This company, which will have a capital of \$350,000, will be known as the National Carbide Co., and the annual capacity will be about 15,000 tons of calcium carbide per year. It is believed that the site selected for the factory presents unusual opportunities for the manufacture of carbide.

St. Louis, Mo.—It is reported here that the Michigan Central Railroad Co. is negotiating for the Southern Traction Co.'s line from Belleville to St. Louis, which is in the hands of a receiver. The plan, it is said, is to operate it as a steam-power coal road, so as to make available for the Michigan Central's use next winter the output of the five mines located near it. The line now has switch connections with the Murphy mine, operated by the Taylor-Vogt-Wolf Syndicate; the Lattner-Reeb and the new National and connections are to be made with the Schramm and the White Rose.

Frankfort, Ky.—An emergency fuel-wood campaign to stimulate the cutting of fire

wood in the early fall will be launched in this state by J. E. Barton, state forester. Mr. Barton is of the opinion that the high price of coal will encourage many farmers to cut wood but thinks the movement should be stimulated. If directed along right lines, he said, the state's wood lots would really be improved. Maximum utilization of wood available for fuel on the farms and within team-hauling distances from the villages, Mr. Barton estimates, would relieve the railroads of the necessity of hauling between two and three million tons of coal.

Pittsburgh, Penn.—Since the Pittsburgh City Council has considered the proposition of securing a coal mine for city use other municipal governments are also considering this step. It is said that Cleveland contemplates such a move with a central power station to supply electricity for Cleveland and other northern Ohio cities that wish to join in the venture. Latterly the Renting Agents Association of Chicago has organized a corporation with a capital stock of \$1,500,000 to operate its own mines for its own use in the Pocahontas field of West Virginia. It will purchase an operating mine so as to have a coal supply at once.

Birmingham, Ala.—Morris W. Bush, chairman of the subcommittee named by Erskine Ramsay, member of the National Defense Committee for increasing the production and distribution of coal, has named his associates to handle the situation in Alabama. Mr. Bush will have associated with him G. F. Peter as vice chairman, H. T. DeBardeleben, Edgar L. Adler and J. W. McQueen. This committee will begin immediately the compilation of data on the coal situation in Alabama both as regards tonnage in the past and possibilities of increasing the output in the future. A special effort will be made to increase transportation facilities so that the coal may move as fast as it is mined.

Columbus, Ohio.—The control of the Lake trade has passed to F. C. Baird, traffic manager of the Bessemer & Lake Erie Railroad, under the agreement entered into by the bituminous coal operators of Ohio, West Virginia and Kentucky, after conferences with the council for the national defense at Washington. All of the coal on the Great Lake docks will be turned over to Mr. Baird and the group plan of shipping coal up the lakes will be started. Ohio operators say they gladly relinquish their individual plans of handling the situation, in the hope that under the new plan in which Mr. Baird has absolute control, the car shortage will be solved. Under the system of loading group coal, the maximum of efficiency will be secured in the operation of Lake vessels. According to local coal men this plan seems the only feasible one for taking care of the coal demands of the Northwest.

Birmingham, Ala.—The Southern Railway Co. has entered the coal mining business in this district under the name of the Railway Fuel Co., which has been incorporated with a capital stock of \$10,000. H. B. Spencer, president; W. E. Leake, vice-president; H. C. Ansley, treasurer; and A. H. Plant, comptroller, all connected with the Southern Ry. in some official capacity, are the officers of the new company. Development is being made on a tract of several thousand acres in Walker County, near Parrish. A slope opening is now being made, and it is understood that one or more additional mines will be developed as early as practicable. The coal will be mined from the Big Seam and will be used by the Southern Ry. and its allied lines exclusively. W. E. Leake, vice-president of the company, will be in active charge of operations. Mr. Leake was, until recently, vice-president of the Alabama Co. and is an experienced mining man.

St. Louis, Mo.—The East St. Louis Chamber of Commerce and the manufacturers of the East St. Louis district have authorized R. W. Roniequet, the chamber's traffic adviser, to file protests with the Illinois Public Utilities Commission and the Interstate Commerce Commission against proposed increases of coal rates. The new tariffs contemplate an increase of 40 per cent. of the present coal rates. This is considered excessive and calculated to destabilize rate conditions. The decision of the Chamber of Commerce to file a protest followed a meeting of the traffic managers of the principal industrial corporations on the East side. About 40 were represented. Committees are to be appointed to obtain the cooperation of all industries in the district. At the request of manufacturers the Chamber of Commerce will make a survey of the coal requirements of the East St. Louis district, which will show the quantities of coal needed in a year, by seasons. The purpose is to work out a plan to regulate receipts so that there will be enough at all seasons.

Market Department

GENERAL REVIEW

Anthracite demand less urgent. Bituminous also somewhat easier due to heavier shipments. Movement shows some improvement and still more is expected. Middle Western trade somewhat easier but very unsettled.

Anthracite—Under the combined influence of the reassuring statements emanating from the Federal Trade Commission and the first touch of real summer weather, the trade is sentimentally easier, though for no tangible reason. As a matter of fact, recent shipments have shown a tendency to ease off, which is an unfavorable indication at this time, when the reverse would be expected. Buyers are still taking anything they can get without any question as to size, quality or price, but there is an absence of the excessive premiums that have recently been paid, and with the greater confidence among the consuming interests it is not likely there will be a repetition of these before next Fall at any rate. Business at the outlying points, such as New England, continues on a strictly hand-to-mouth basis and there are still no prospects of being able to accumulate reserve stocks.

Bituminous—Shipments have been heavier and the market is somewhat easier with buyers notably more reserved and expecting further recessions from ruling figures. Rumors of slowing down in some industrial lines, together with the settlement of some of the larger labor questions, have also been a factor, though there are well defined rumblings of unrest among the miners and a continuation of scattered strikes and demands for wage readjustments. Shipments on contracts are still falling behind, but consumers are showing more of a tendency to look for bargains to make up the deficiency. Government investigations and the development of plans for pooling tide-water shipments similar to those now in effect in the Lake trade, may soon have an important influence on the market. The heavy cancellations of passenger service, especially in New England, will tend to economize fuel and release considerable motive power that will help materially to facilitate the movement of freight.

Lake Market—The situation is hinging largely on the car supply, in which some slight improvement is noted and still more is expected when the full effect of the pooling of Lake shipments gets under way; the proposed plan for cancelling a limited number of passenger trains will also tend to relieve congestion at distributing centers and at the same time release additional motive power for freight service. The Lake movement is not yet of large proportions, though it is making a substantial drain on the mines. Buyers who have been staying out of the market in anticipation of easier conditions when warm weather appears have so far been disappointed; prices are holding steady and are showing no indications of a break. The car supply is irregular, apparently being generally adequate in the Pittsburgh district but extremely short through the West Virginia fields.

Middle West—The situation is very mixed, the general tendency being toward easier conditions, though rumors of government action in regulation of prices, together with persistent agitation among the newspapers, is causing anxiety and general uneasiness. June prices show an increase of 25c. per ton, but even at these new levels, the agencies are not able to take much in the way of new business. The raising of a number of embargoes has made the movement somewhat freer, but the railroads are continuing to absorb heavy tonnages. The Indiana mines are receiving numerous inquiries from new territory, such as Ohio, and it is likely that considerable coal will be diverted in that direction. Shipments of Eastern coal into this section have been practically suspended. Receipts of coal at the upper Lake ports are about 300,000 tons behind those for the same period last year.

A Year Ago—Anthracite market steady, Pittsburgh district labor difficulties cause a sharp flurry in seaboard market. Demand continues persistent. Middle Western mine operations heavily restricted but prices steady.

Comparative Average Coal Prices

The following table gives the range of mine prices in car lots per gross ton (except where otherwise noted) on 12 representative bituminous coals over the past several weeks and the average price of the whole group for each week:

Boston	Year Ago	June 9	June 2	Gross Averages
Clearfields.....	*\$1.00@1.55	\$4.75@5.50	\$5.50@6.25	1917 1916
Cambrias and Somerset.....	* 1.30@1.75	5.00@5.75	5.75@6.50	Jan. 27 \$4.64@5.03 \$1.99@2.16
Pocah. and New River.....	2.70@2.80	7.50@8.00	7.50@8.50	Feb. 3 4.66@4.86 1.94@2.10
Philadelphia				Feb. 10 4.70@4.95 1.73@1.91
Georges Creek (Big Vein)....	1.90@2.00	6.25@6.50	6.50@6.75	Feb. 17 4.67@5.04 1.71@1.90
W. Va. Freeport.....	1.15@1.25	5.25@5.50	5.50@5.75	Feb. 24 4.95@5.29 1.64@1.84
Fairmont Gas mine-run.....	† 1.40@1.50	5.75@6.00	5.75@6.00	Mar. 3 5.10@5.48 1.56@1.74
Pittsburgh (steam coal) ²				Mar. 10 5.36@5.61 1.53@1.68
Mine-run.....	† 1.75@2.00	4.75@5.00	4.75@5.00	Mar. 17 4.80@5.19 1.46@1.65
4-in.....	† 1.75@2.00	4.75@5.00	4.75@5.00	Mar. 24 4.64@4.94 1.49@1.66
Slack.....	† 1.65@1.90	4.75@5.00	4.75@5.00	Mar. 31 4.20@4.44 1.46@1.61
Chicago (Williamson and Franklin Co.) ²				Apr. 7 4.07@4.36 1.44@1.60
Lump.....	† 1.45@1.55	3.25@3.75	3.25@3.75	Apr. 14 4.01@4.35 1.45@1.61
Mine-run.....	† 1.25@1.35	2.75@3.50	3.00@3.50	Apr. 21 3.83@4.14 1.46@1.62
Screenings.....	* .90@1.00	2.75@3.75	3.00@3.50	Apr. 28 3.81@4.12 1.45@1.62
Gross average ³	†\$1.52@1.72	\$4.80@5.24	\$5.00@5.46	May 5 4.04@4.40 1.45@1.59
				May 12 4.64@4.98 1.44@1.59
				May 19 5.08@5.54 .42@1.56
				May 26 5.10@5.58 1.41@1.55

¹ F. o. b. Norfolk and Newport News. ² Per net ton. ³ The highest average price made last year was \$4.80@5.33 made on Nov. 25. * Price lower than the week before. † Price higher than the previous week.

BUSINESS OPINIONS

Iron Age—Pittsburgh has signaled the arrival of \$50 pig iron by one of the most exciting weeks in the Bessemer iron market since the beginning of the war. Sales have amounted to 75,000 tons, of which one steel company took 40,000 tons at prices ranging from \$46 to \$50. At the latter figure at least 20,000 tons have been sold. Not only pig iron, but semi-finished and finished steel markets, have been affected by the developments at Pittsburgh, since they confirm what has been well-considered opinion in the trade for some weeks, that future war advances were likely to come as abruptly as any that have come in the last two years, and might go to length, even now thought impossible.

American Wool and Cotton Reporter—Wool of any kind is mighty good property. South American wool still predominates in the sales. The Government is preparing for clothing for cold weather and manufacturers must have the wool if it is at all obtainable. In the West the situation is very strong. Practically all contracts have been sold.

Marshall Field & Co.—Wholesale distribution of dry goods for the current week is running in equal volume to the corresponding period of a year ago. Road sales for immediate delivery are about the same in volume as last year, while those for future delivery continue well ahead.

Dun—With the additional stimulus imparted by the extensive and increasing government demands, manufacturing in most branches throughout the country continues under high pressure, whereas in about all sections lessening of ordinary distributive trade has become a more conspicuous feature. The diminished retail transactions largely reflect the backwardness of the season, and the extreme costs of necessities are also influential in causing curtailed purchasing by consumers. Commercial failures this week are 277 against 314 last week, 298 the preceding week and 292 the corresponding week last year.

Bradstreet—Distributive trade pauses, but industrial activity in the leading lines tends to broaden, the grain crops to improve, and the government to buy heavily of numerous kinds of supplies. But ordinary domestic buying reflects indubitable evidences of cautious buying on the part of an exceptionally well paid and more than well employed populace, for which attitude a trinity of causes may be assigned, namely, prolonged unseasonable weather, high prices and indications of a rather widespread desire to economize.

Dry Goods Economist—"Fruits" at 15c. may well make an old-time cotton goods man stare. A plain bleached muslin of medium grade selling for what at one time would have bought a fancy dress cotton! Nor is this steep advance over the price ruling during even good times a few years ago an exceptional one. On the contrary, increases more or less similar are apparent in cotton goods of all kinds, as in many other lines.

CONTRACT ITEMS

Washington, D. C.—The Navy Department has requested bids on coke as follows: 500 tons each of grades Nos. 1 and 3 for use in Washington, D. C.; 935 tons of gas house grade No. 3 for use at Boston, Brooklyn and Philadelphia; 3775 tons of grades Nos. 1, 2 and 3, 72-hour foundry coke for various deliveries.

Columbus—Estimates that its coal bill for the fiscal year beginning July 1 will be at least \$250,000 more than last is made by the Ohio state authorities. Under the law conserving natural-gas supply, several institutions that have depended on that form of fuel will be shut off, and two new institutions have been added. The big increase will come, though, through the higher price of coal. An average price of \$2 per ton was paid last year, but the same coal cannot now be contracted for at less than \$4. Even at this, funds will not be available before July, and prices may be still higher then. The estimated requirement for the year is 200,000 tons.

Columbus—Reports received from representatives of various railroads operating in this section indicate that the railroads do not look for a lower coal market for some time to come, some roads having contracts for coal, recently entered into, for two years, at prices ranging from 75 to 100 per cent. in advance of those of last year. Figures range around \$1.80@2.25 a ton at the mine for mine-run coal.

Cleveland—Mayor Davis and other city officials met fifteen coal operators and dealers in conference on June 2 to make arrangements for providing the city's fuel supply during the coming winter. The coal men agreed to jointly furnish the requirements for the municipal plants, involving 250,000 tons at \$3.50 per net ton, f.o.b. mine, the coal carrying a 90c. freight rate to Cleveland. It is expected a similar plan will be worked out to provide the requirements of the schools.

Cleveland—Contracts aggregating 220,000 tons of Pittsburgh No. 8 coal have been closed at prices ranging from \$2.50 to \$4 per net ton, f.o.b. mines. The city contracts, involving 10,000 tons of No. 6 mine-run coal for the garbage plant, delivery to be made during the year beginning June 1, have been let at \$5.70 per ton, f.o.b. Cleveland, which is on the basis of \$5, f.o.b. mines.

Louisville—For the first time in many years the public school season is closing without an adequate supply of fuel contracted for by the Board of Education. Bids for the supplies of the usual kinds of coal have been advertised for something more than a month in the usual manner but not a single bid was filed with the business manager of the schools. No announcement has been made by the Board of Education as to how it hopes to provide for the needed supply.

Chicago—Bids on the contract for furnishing the local schools with coal during the new year increased from \$5.69@7.295 to \$2.55@2.99 last year. All the new bids

were turned down. The appropriation made for the school coal last year was \$400,000, and it is estimated that the coal this year will cost \$600,000 more.

Detroit—The Board of Education at this place has requested bids for supplying the local schools with coal during the year beginning July 1 for the third time. No response was received at all to the two previous requests for bids. The United Fuel & Supply Co. who had the contract last year attempted to secure additional remuneration, running as high as \$6.25 a ton on part of the coal supplied the Board during the past winter, but has finally been compelled to make a settlement at a flat rate of \$3.25.

North Yakima, Wash.—The School Board at this place received bids until June 4, for furnishing approximately 800 tons of coal for use in the local school buildings.

Current Events

Prices—The threatening attitude of the Federal Trade Commission, together with the appearance of real summer weather, have reduced prices still further, though the average level is better than that prevailing through January and most of February. The decline has been confined largely to the Eastern sections, such as Boston and Philadelphia, though Middle Western quotations have also suffered moderately.

Production—A belated statement of the Southwestern Coal Operator's Association shows the production for those states for the full year 1916, nearly three-quarters of a million tons behind 1915. Both November and December in 1916 showed a smaller production than in 1915.

Shipments over the Baltimore & Ohio R.R. for April of this year showed an increase of more than 200,000 tons, as compared with the same month last year. The April tonnage was 100,000 tons less than March of this year, but nearly 500,000 tons in excess of the February figures.

Transportation Notes—The Government has commandeered two towboats and twelve barges for use in conveying coal from St. Louis by way of the Mississippi River to St. Paul and intermediate points. Other privately owned equipment is also being inventoried with a view to being taken over for the same service. The boats will bring back iron ore on the return trip.

The U. S. Engineering Department at St. Louis has been ordered to assemble a fleet of 24 Government barges and the necessary tugs, and make a trip to St. Paul with 15,600 tons of Illinois coal, bringing back 24,000 tons of iron ore for the St. Louis smelters on the return trip.

Miners and operators in the Pomeroy Bend district of Ohio have protested to the state utilities commission against the proposed 15c. increase in rates on coal hauled to the Great Lakes, to become effective July 1, unless the commission, on hearing of objections, rules otherwise. At the same time, a similar increase on interstate shipments will go into effect.

Interstate Commerce Commission—In a preliminary report issued by the Interstate Commerce Commission it is intimated that there will be no change in the Lake cargo coal rates. The rates from points in Pennsylvania, West Virginia, Ohio, Kentucky and Tennessee to Lake ports for transshipment had been attacked as excessive. A hearing will be held on June 14.

Pooling Lake Shipments—This arrangement, which is being conducted under the head of The Lake Erie Coal Exchange, became effective June 1 and it is expected that it will rapidly clear up the congestion and confusion now being found at the lower Lake ports, due to the long delay in the opening of navigation. Frederick C. Baird will be the Commissioner in charge of the exchange.

Pooling Tidewater Shipments—On Monday, June 4, a meeting of bituminous coal operators and shippers was held in Philadelphia to consider the possibility of forming a pooling arrangement similar to that now in effect in the Lake trade. A committee of five of the leading coal men was appointed to report on the matter, and more especially to obtain a ruling from the Department of Justice at Washington as to the legality of the proposed plan. The committee met in Washington on Wednesday and conferred with similar committees representing consumers, railroads and transportation companies, at which the entire plan was discussed in detail.

Government officials are making it known that they believe that coal operators should furnish manufacturers engaged on Government contracts, with fuel at last year's figure plus increased labor and other costs, the same as they did on the navy contracts.

On Tuesday, of this week, separate meetings were held in the offices of the Lackawanna and the Lehigh Valley companies in New York City, at which the leading handlers of the coals of these respective companies were in attendance. It is understood that plans for pooling shipments were discussed at these meetings.

Federal Trade Commission—Agents of the commission have been actively engaged in collecting data from coal dealers in all parts of the country. They are requiring the dealers to submit statements showing tonnage received by months this year as compared with last year, the prices charged by shippers, together with those at which the coal was sold to the consumers, and the number of cars ordered and those actually received. It is to be regretted that a number of irresponsible dealers are seizing upon the opportunity to make considerable unnecessary trouble for the shipping interests. However, the work of the investigators is apparently showing results as is evident by the great care some of the shipping companies are making to obtain an equal distribution of their products.

The Commission issued a statement on June 5 to effect that its efforts to lower prices were meeting with substantial success. It said in part: "The producers of a very great proportion of anthracite tonnage are selling their output at moderate prices so that the high premiums charged by a number of operators during recent weeks are beginning to disappear from the market."

There was a persistent rumor in New York on Tuesday of this week to the effect that the Federal Trade Commission had decided upon prices for the product of independent operators, and that the June prices at the mines were to be: Egg, \$4.90; stove, \$5.15; chestnut, \$5.25 and pea, \$4.45. These figures are about 50c. higher than those charged by the large operating companies. It was also rumored that the Commission had decided that jobbers must not charge more than 20c. profit. If these prices are authentic, independent coal at New York Tidewater will sell at the docks as follows: Egg, \$6.30; stove, \$6.55; chestnut, \$6.65, and pea, \$5.75.

Fuel Shortage Items—A movement has been initiated by the Governor of Wisconsin to establish an agency to control the distribution of coal in that section next winter. Attention will be directed especially toward increasing the shipments by Lake. Mayor Hoan has asked consumers to refrain from buying more coal than actually required and President Earling, of the Chicago, Milwaukee & St. Paul Railway, states that his company is planning to reduce their fuel requirements by cancelling a number of passenger trains.

More pressure is being constantly brought upon the Government to regulate prices. For instance, the New York State Conference of Mayors on June 1 addressed the following communication to President Wilson: "The municipalities must soon make provision for heating the schools and other public buildings, and for operating their water plants and other utilities. We appeal for your help to avert what will become a serious condition unless prompt and effective action is taken by the Federal Government against apparent discrimination in transportation and inflation in prices. We believe that the time for investigation, promises and threats have passed and that the situation demands immediate and drastic action."

Members of the Board of Education at Columbus, Ohio, have instructed the president to communicate with Mayor Karb, Governor Cox and Ohio congressmen, asking them to see if some relief from the increasing prices of coal cannot be secured.

Legal—The Jefferson County Grand Jury has rendered a decision absolving Louisville coal dealers from the ruling high prices and throwing the entire blame onto the operators. The report states: "About one year ago eastern Kentucky coal sold on an average of \$1.50 per ton at the mines, this same coal now selling at \$5 per ton. The western Kentucky coal, which sold at an average of \$1 per ton at the mines, is now bringing \$3.50."

Ocean Shipping—A joint committee from the House and Senate on June 1 reached an agreement on the war budget, including a provision for \$750,000,000 for an American merchant marine. The measure as passed provides that the President will direct and be responsible for the acquisition of the merchant vessels, but also specifies that the Emergency Fleet Corporation, of which General Goethals is the head, as well as the Government Shipping Board, must be used.

Secretary Redfield notified Congress on June 2, that on May 1 there were under construction in the United States 537 steel vessels, aggregating more than 2,000,000

tons, and 167 wooden vessels of a total of more than 200,000 tons. The figures quoted are nearly double those of a year ago.

In an executive order on May 31 the President turned over to the United States Navy five German ships to be used as converted cruisers and in a second executive order, Secretary Daniels is authorized to use the following vessels as colliers: "Saxonia," "Frieda Leonhardt," "Hohenfelde," "Nicaria," "Kiel," "Rudolf Blumberg," "Vogesang," and "Breslau."

The Brazilian Government on June 2 issued a decree taking over the 46 German merchant ships laid up in ports of that country. The vessels aggregate more than 240,000 tons, there being 33 of more than 4000 tons each.

On June 1 there was a decided flurry in shipping circles when the port of New York was suddenly closed for several hours for purely routine purposes in connection with harbor defenses. Having come entirely unexpected and unannounced, it created a great deal of anxiety for the time being, but the Navy Department has now issued a statement that warnings will be given in case this should be necessary again.

Labor—President White of the United Mine Workers has made a demand on President Wilson that the United Mine Workers of America be represented on the Committee on Coal Production of the Council of National Defense, stating that certain actions of the committee were regarded as unfriendly to organized labor. The reasons given for this move are laid down in a statement by the International Executive Board of the United Mine Workers of America as follows: "We are inspired to make this declaration, first, because we deem it necessary that the attitude of the United Mine Workers' organization at this critical period may be correctly understood; second, because it is made absolutely necessary by the creation of a committee on coal production of the Council of National Defense, upon which not a single representative of the mine workers has been appointed; third, a lengthy statement has been issued by the committee in which suggestions are made and plans outlined which if in force would stifle the legitimate purpose of the trade union movement as represented by the United Mine Workers of America. It would lead to sullen resentment in the mining communities of our country and inevitable disruption of the industrial peace which is so greatly to be desired during this crisis."

In the meantime miners are constantly leaving the regions because of the intermittent work occasioned by the inadequate car supply. Enlistments in the army are also absorbing a considerable number.

Atlantic Seaboard

BOSTON

No perceptible change at Hampton Roads. Pooling arrangements considered, but only Government cargoes likely to be included for the present. Georges Creek cargoes occasionally offer. Better movement from Pennsylvania districts and market sentimentally weaker. Anthracite unchanged.

Bituminous—The present lull in demand for Hampton Roads coals is felt to be only temporary. So many inquiries were turned down a fortnight to a month ago on account of light receipts at the piers that buyers here are following out a waiting policy. To enter the market at this time would not bring any shipments worth mentioning, but in spite of that situation we are bound to recognize that prices are sentimentally weaker. The attitude of the Navy Department in favor of last year's contract price, f.o.b. the mines plus labor and other extra costs this year as compared with 1916, has gradually been made known to buyers along the coast and particularly in this market. They reason that if the operators and their agents can meet the views of the Government as a matter of patriotism, then there ought to be somewhat more reasonable prices for manufacturers of goods intended for the Government. There is an undercurrent of opinion here that water freights will also be "adjusted" on a more equitable basis than at present obtains.

Railroad representatives have been sounding out opinion here as to the value of a pooling arrangement such as prevails in the Lake trade. So far only dumpings at Hampton Roads have been considered, and those only so far as concerns Government requisitions. Without doubt, at a time like this, when relatively light receipts are the rule with each agency, a pooling agreement would help materially in freeing both cars and ships. The grades are more nearly even at Hampton Roads than at any of the other loading ports, but it is prob-

able the Government will try to put similar plans into effect on coal for its use at Baltimore and Philadelphia.

The Boston & Albany and the New Haven railroads have now followed the Boston & Maine in making heavy cuts in passenger accommodations. A large number of locomotives will thus be turned to moving freight and there are some very optimistic statements about the probable effect.

Scattering cargoes of Georges Creek have been offered, although only a few sales are reported; \$11.50 to 12 has been quoted delivered alongside in cargo lots for spot coal.

Notwithstanding a new agreement between the Pennsylvania operators and the mine-workers' representatives, many of the miners are dissatisfied and either refuse to work or confine their efforts to getting out just sufficient coal to enable them to live. There is also a great scarcity of cars for New England points, and in many operations for both reasons the output is not much better than 35@40 per cent. of what it should be. The result is that contract shipments are still light.

Movement has been generally better, however, and the embargo placed by the Boston & Maine R.R. on June 1 against shipments via Rotterdam is understood to be only temporary.

Operators who sold coal subject to advanced cost of mining are giving notice that the 35c. additional will be retroactive to Apr. 16. This was not unexpected and meets with little or no comment.

Spot prices have eased off still further in response to less buying interest; \$5 is now freely quoted for coal to be shipped and prices are less than that for fair coal that is now en route. Very little high-grade coal is available, although contract shipments of the latter are in slightly better volume.

Bituminous at wholesale is quoted about as follows, f.o.b. loading ports at points designated, per gross ton:

	Clearfields	Camb. and Somersets
Philadelphia.....	\$6.00@6.75	\$6.25@7.00
New York.....	6.35@7.00	6.50@7.35
F. o. b. mines.....	4.75@5.50	5.00@5.75
Alongside Boston (water coal).....	10.75@11.25	11.00@11.50

Pocahontas and New River are now quoted at \$7.50@8, f.o.b. Norfolk or Newport News, Va., for spot coal, and \$11.25@11.75 on cars Boston and Providence for inland delivery.

Anthracite—The retailers continue to do strictly a hand-to-mouth business, being still unable to get coal more than a week or two in advance of actual needs. Even screenings and the steam sizes are hard to secure. All the domestic are extremely hard to get, and water shipments improve not at all.

The "Independents" are offering very little. At this writing all the middle houses are having their first experience with weekly reports to the Federal Trade Commission. These call for complete records of each delivery, whether by car or by cargo, and no doubt the information thus received will be a valuable sidelight on the inner workings of the wholesale trade.

The New York companies are not at all encouraging about future consignments, although there is a feeling here that when metropolitan requirements drop off for the summer there will be a better chance for New England. New York needs, however, are likely to remain right up to the limits of storage.

Only the usual 10c. advance on domestic sizes was announced by the wholesalers June 1. The "company circular" now figures from \$6.45 to \$7.20 alongside, in each case plus insurance.

NEW YORK

Hard steam coals easier and quotations lower. Domestic sizes in good demand, but none to be had. Dealers rely on operators' promises of plenty of coal before fall. Bituminous situation steady with prices firm. Buyers look for decrease in prices. Production shows light improvement.

Anthracite—The situation is gradually becoming settled. Demand for the domestic coals continues heavy but the steam sizes are more plentiful and prices are slowly receding. Quotations for the larger sizes at Tidewater are hard to get because there is no coal to be had. From what can be learned quotations at the mine range from \$4.50 to \$5.10, according to grade.

Supplies of domestic coal have not increased and, although there are plenty of buyers who are anxious to fill their bins, there is not that urgency that existed a few weeks back. Dealers and consumers are optimistic of the future and believe the recent statements of the operators, that there will be plenty of coal to meet all demands before the snow flies. The production figures for May are expected to be heavy.

The favorable results obtained by the city officials last month, when they purchased about 11,000 tons of anthracite coal in the open market, has resulted in a decision to make a similar purchase this month. The standard specifications have been waived for the present and the bidder is not required to furnish a bond.

The heaviest call is for egg and chestnut sizes, but there is no surplus to be had of any size. No dealer is willing to say when shipments can be made and the companies are not accepting orders for new customers. Pea coal is in no better shape and few dealers have any to offer.

There is a good supply of the steam coals. Seasonable temperatures have slowed down consumption and with the stocks increasing lower prices for the independent product have resulted. Buckwheat No. 1 is in the largest supply, while barley is freer than rice.

Current quotations, per gross ton, f.o.b. Tidewater, at the lower ports are as follows:

	Circular	Individual
Broken.....	\$5.40@5.55	.....
Egg.....	5.40@5.55	.....
Stove.....	5.65@5.80	.....
Chestnut.....	5.70@5.85	.....
Pea.....	4.10@4.55	\$5.60@6.00
Buck.....	4.00@4.15	5.00@5.25
Rice.....	3.40@4.05	4.00@4.25
Barley.....	2.90@3.10	3.00@3.25

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—The expected break has not materialized and buyers who have been waiting for lower prices and bargains are now buying odd lots at almost the same prices that prevailed a week ago. Occasionally, a stray cargo which is almost due for demurrage charges, has been picked up at probably 25c. below the present market but these have been scarce. A break is looked for, however, within the next few weeks when it is expected prices will take a decided drop.

Reports from the mines are encouraging and there is a feeling that the miners will endeavor to increase production. There have been some local labor troubles but most of these were easily ironed out. Car supply shows some improvement, an average of about 60 per cent. having been reached last week. Sufficient coal under contract is not being received to fill all requirements but consumers are not as eager to go into the market for free stocks to supply the deficiency, unless they are shown some bargains.

Good gas coal is scarce and there are operators and shippers who refuse to take any new orders.

Current quotations, per gross ton, f.o.b. Tidewater, for various grades are as follows:

	Port Reading	South Amboy	Mine Price
George Crk.			
Big Vein..	\$7.25@7.50	\$7.25@7.50	\$5.25@5.75
Tyson...	7.00@7.25	7.00@7.25	5.00@5.50
Clearfield..	6.75@7.25	6.75@7.25	5.00@5.50
South Crk..	.....	7.00@7.25	5.00@5.50
Nanty Glo..	.....	7.00@7.25	5.00@5.50
Som'r. Co..	6.75@7.00	6.75@7.00	4.75@5.25
Que'ho'ing..	7.00@7.25	7.00@7.25	5.00@5.50
W. V. Fairm't			
Th'r'ous..	6.75@7.00	6.75@7.00	4.75@5.25
Mine-run...	6.75@7.00	6.75@7.00	4.75@5.25
West. Md..	6.75@7.00	6.75@7.00	4.75@5.25

BALTIMORE

Regular 10c. advance in anthracite. Bituminous market softer under heavy receipts. Pooling plan here causes comment.

Anthracite—The first of June saw the regular advance of 10c. a ton in anthracite here. This is added to the 25c. a ton adopted in May as additional over the old winter schedule. Dealers here have been unable to get any quantity of cut-price fuel at any time, and have paid premiums on much of that they get through for immediate needs. Receipts on all kinds of hard coal continue far below normal.

Bituminous—The market here is much softer following heavy receipts of coal. Every one of the terminals here was well supplied with fuel during the past week. For the first time in many weeks shippers were seeking an outlet for some of the coal they received while consumers slowed up, apparently waiting for better prices than were offering. Spot prices here were on a par with the offerings at the mines for the first time in weeks.

The mine basis for coals of interest here is about as follows: Georges Creek Tyson, \$5.25; Somersets, \$5.00; Quema'honing, \$5.00; Clearfield, \$5.00; Freeport, \$4.50; Fairmont gas, three-quarter, \$5.00; run-of-mine, \$4.75; slack, \$4.50.

PHILADELPHIA

Anthracite shipments decline after improvement was thought due. New June prices cause little comment. Companies make regular advance but individuals show wider increase, with elimination of premium coal. Trade commission interviews retailers. Contract prices to be increased. Bituminous prices fluctuate. Buyers timid about big purchases, expecting lower rates.

Anthracite—Shipments into the city are experiencing an unaccountable slump and some of the more important retail yards are actually bare. Just as real summer weather began and the dealers were beginning to make some headway on the accumulation of stocking orders, receipts fell off. None of the big companies are holding up their end and many dealers are in a quandry what to do with their working forces.

The representative dealers have much business in hand and they keep hoping the shippers will change their policies and make heavy consignments in this direction. With the yards practically empty and when all cars are so sure to be unloaded immediately after delivery, it is strange the operators are not more attentive to this market, more especially when the short haul from the coal region is considered. The car supply has been in a serious state for months, but there has been reason to expect an improvement in this now due to the recent heavy curtailment of passenger service by the railroads entering this city. This has been particularly true of the Reading System, which has made drastic cuts in the passenger service of all its branch lines. Despite this important move there has, if anything, been a lessening in the already light shipments.

It is beginning to appear that the recent fancy prices are a thing of the past. As was expected, the big companies on June 1 advanced their circular rates 10c., but several of the individuals made increases of 15c. to 25c. a ton on prices which already have been higher than the circular rates of the big companies. Even at that, while the individual prices are higher it cannot be said that they are extortionate. One of the more important concerns of this kind is asking 25c. above the regular circular, or \$4.40 for egg, \$4.65 for stove and \$4.75 for chestnut, with pea coal at \$3.60. Another large individual asks 10c. above these figures on egg and stove, the same on chestnut, with pea at \$3.50. The individuals claim that, in conformity with the request of the governmental authorities, they are no longer asking premiums even though their coal is higher priced than the big companies; they state the prices they quote are the same to every customer and they are endeavoring to sell old customers only and then on the basis of past purchases. While the prices do not affect the retail dealers, who are not disposed to be critical, there is at the same time much quiet complaint as to the preparation of the coal. No one, of course, has the temerity to enter a protest for fear of losing even a single car, yet we feel that there might be considerable cause for just complaint.

The retail prices have, of course, shown the effect of the increased wholesale rates, even more so than usual on account of the much higher individual coal. We now seem to be approaching the time when \$9 a ton retail for family coal, with the exception of pea, will likely be the rule.

No size of coal is now more in demand than any other among the retailers, although the consumer continues to ask for pea coal and then winds up by taking just what the dealer has. We know of one case where a customer took a ton of egg coal and broke it up in his cellar into smaller sizes and actually claimed he was pleased with the result. Dealers simply ask for coal and take any quantity of any size and quality with very little question as to price.

In the steam grades there is some complaint among consumers at not receiving sufficient coal to meet their needs of late. There is practically no coal of these sizes for sale to the transient trade now, as most all of it is taken up by the contractors; while these are few in number as compared with other years, they are with the heaviest consumers at greatly increased tonnages.

Those concerns under contract are also finding that their prices are likely to be increased on all shipments made since the new wage agreement went into effect. All contract forms were changed this year to meet the contingency of a wage increase and the companies are now determining just what the exact percentage will be. The wage increase was spoken of in general terms as being 20 per cent., but there were variations in the scale such as to make the actual increase a matter of doubt until an exact compilation can be made.

All interests continue to be very quiet in regard to the tax refund and it would

not be at all surprising that the matter will be quietly sidetracked for a couple of years, or at least until the present trying times are past. It can be taken for granted, however, that the dealers will make a claim for the refund at the first favorable moment.

The prices per gross ton, f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for tide, are as follows:

Line Tide	Line Tide	Line Tide	Line Tide
Broken.... \$5.00 \$6.15	Buck..... \$2.90 \$3.80		
Egg..... 4.15 5.25	Rice..... 2.40 3.40		
Stove..... 4.40 5.60	Boiler..... 2.20 3.30		
Nut..... 4.50 5.55	Barley..... 1.90 2.15		
Pea..... 3.10 4.00			

Bituminous—There has been considerable fluctuation in prices of late. Early this week there was a downward tendency but this was checked when it was learned, that despite the efforts of the operators to keep the men at work on Memorial Day, very little coal was really produced. Many mines were completely shut down and the immediate effect was a strengthening all around. This was then followed by a slight reaction and at this time there seems to have been an average decline of about 25c. in the best coals. There have, of course, been quite a few sales at lower figures than we quote, but on the whole the prices are as shown below. In the Fairmont coals there has been practically no change for a week, with slack still in short supply and high in price.

Buyers still remain quite timid about closing for much more than current consumption, feeling that despite war conditions the middle of the summer will as usual see comparatively heavy reductions from prevailing figures. There have been rumors recently of some slowing down along certain industrial lines engaged in other than war munition work, which might possibly release some coal for other lines. However, most shippers seem to be of the opinion that if coal continues to be as scarce as at present, even higher figures may be expected by mid-summer.

With the settlement of the labor troubles in the central district better shipments are coming from there, although it is said that there are still mutterings of unrest among the men that would indicate they are not entirely satisfied. There is also a continuation of scattered strikes among the unorganized miners in the district, who, even though they are receiving more than the union scale, are still asking for further adjustments of their wage schedules.

There has been no improvement in the car supply and many of the mines continue to be handicapped on this account. There has, however, been very little confiscation of coal on the part of the railroad companies of late and they seem to be getting fuel in better supply from the regular channels.

The prices per gross ton, f.o.b. cars at mines, are as follows:

Georges Creek Big Vein.....	\$6.25@6.50
South Fork Miller Vein.....	6.25@6.50
Clearfield (ordinary).....	5.75@6.00
Somerset (ordinary).....	5.75@6.00
West Va. Freeport.....	5.25@5.50
Fairmont gas lump.....	6.00@6.25
Fairmont gas, mine-run.....	5.75@6.00
Fairmont gas, slack.....	5.75@6.00
Fairmont lump, ordinary.....	5.50@5.75
Fairmont mine-run.....	5.50@5.75
Fairmont slack.....	5.75@6.00

HAMPTON ROADS

Prices slightly easier. Spasmodic improvement in car supply. Congestion at piers relieved. May dumpings slightly less than April.

The recent high prices have not been maintained, being some 50c. per ton under last week's quotations. This is no doubt partly due to the temporary improvement in car supply causing comparatively heavy receipts for several days. One day recently witnessed the heaviest loading on record by the mines located on the Virginian Railway. These conditions have relieved the congestion existing at the various terminals for the past several weeks and good despatch is obtained by vessels, except in isolated cases.

Dumpings for the month of May are some 20,000 tons less than for April. The Norfolk & Western Ry. shows a loss while the Virginian and Chesapeake & Ohio both show an increase. The tonnage in detail is: Norfolk & Western Ry., 510,051; Virginian Ry., 432,838; Chesapeake & Ohio Ry., 460,745; total, 1,403,634 gross tons.

The demand for coal is heavy from all sources, every contractor taking his full allotment and a good demand from purchasers at the market. Prices are about \$7@8 per gross ton for Pocahontas and New River for coastwise and export shipment; \$7.50@8.50 per gross ton for bunker

delivery, plus 15c. trimming. Local deliveries, \$6.50@7 per net ton on track in car load lots. High volatile coal is strong at about \$1 under the above figures. Anthracite is still \$8.50 per net ton delivered for cash.

Dumpings at the Hampton Roads piers for the past several weeks were as follows:

	May 12	May 19	May 26	June 2
Nor. & West....	165,326	146,730	105,640	118,193
Ches. & Ohio....	104,252	117,143	83,666	114,536
Virginian.....	95,462	112,975	92,875	88,602
Total.....	365,040	376,848	282,181	321,331

Ocean Shipping

COASTWISE FREIGHTS

Water rates are weak, although transportation people are not willing to quote except on bona fide inquiry. Only steamers and small barges are actually in the market, and on these an offer to load with reasonable dispatch would probably bring a lower freight than has been quoted this season; \$4 has been intimated on barges from Hampton Roads to Boston and it is known that steamers have chartered at \$3.50. Very few orders are in the market.

Rates from New York to Boston are quotable at \$2.50, along with \$1.75 to Providence and \$4 to eastern Maine points. There is still much difficulty about getting boats accepted, particularly on anthracite.

OCEAN FREIGHTS

Very few charters for export coal were effected during the past week, and none of any importance have been reported. We still have some steamer and sail tonnage interested in South American coal.

We would quote freight rates on coal by steamer as follows:

	Europe	May 28	June 4
West Coast Italy	\$100.00 about	\$100.00 about	
Marseilles.....	103.00 about	100.00 about	
Spain (Atlantic)*	30.00@36.00	30.00@36.00	
Spain (Med'n)*	32.40@38.40	32.40@38.40	

Note—Charters for Italy, France and Spain read: "Lay days to commence on steamer's arrival at or port of discharge."

	South America	May 28	June 4
Montevideo.....	\$30.00 about	\$30.00@30.60	
Buenos Aires.....	30.00 about	30.00@30.60	
Rosario.....	31.20 about	31.68 about	
Rio Janeiro.....	30.00 about	30.00@32.00	
Santos.....	32.00 about	34.00 about	
Chile (good port)	17.50@18.50	17.50@18.50	

	West Indies	May 28	June 4
Havana.....	5.50@5.75	5.50 about	
Cardenas, Sagua	6.75 about	6.75 about	
Cienfuegos.....	7.50 about	7.50 about	
Port au Spain....	10.75 about	10.75 about	
St. Lucia.....	10.75 about	10.75 about	
St. Thomas.....	8.75@9.00	8.75@9.00	
Barbados.....	10.75 about	10.75 about	
Kingston.....	7.00@7.25	7.00@7.25	
Curacao.....	18.75@9.25	8.75@9.25	
Santiago.....	7.50 about	7.50 about	
Guantanamo.....	7.50 about	7.50 about	
Bermuda.....	6.00 about	6.00@7.00	

	Mexico	May 28	June 4
Vera Cruz.....	9.00@10.00	9.00@10.00	
Tampico.....	9.00@10.00	9.00@10.00	

* Spanish dues for account of cargo. * And p.c. * Or other good Spanish port. * Net.

W. W. Battie & Co.'s Coal Trade Freight Report.

Lake Markets

PITTSBURGH

Tidewater coal pooling, similar to Lake coal pooling. Car supplies fair. Spot market unchanged.

A meeting was held in New York Monday to arrange details of a coal pooling system for tidewater shipments, similar in general principle to the system being applied to Lake coal shipments, whereby when a vessel is available it is to be loaded with the description of coal available irrespective of its ownership. The Lake coal pooling system was estimated as likely to save 10% in car supply. Demand from the east has been light in the Pittsburgh district the past week.

Lake shipments have not amounted to anything like their maximum but still make quite a drain on the mines, and it is difficult to keep regular consumers supplied, even though car supplies are nearly equal to mine capacity. Car supplies are averaging about 60% of the nominal allotments, which are usually in excess of the actual mine capacity, particularly when labor shortage is taken into account.

A large volume of business continues to pass through the spot market, a great deal of it being handled by brokers. In addition to this there is a great deal of

coal moving to consumers on a general arrangement that there shall be a weekly price adjustment in keeping with the prevailing spot market. Perhaps this acts as a balance wheel, at any rate the spot market shows less variation from week to week than might have been expected. We repeat quotations of the past two weeks for spot coal, \$4.75@5 for steam and \$5@5.25 for gas, per net ton at mine, Pittsburgh district, with practically no distinction made between slack, mine-run and 3-in.

BUFFALO

Not much change in bituminous prices. Market as badly disturbed as ever. Cars moving very irregularly. Anthracite going up the lakes at a good rate, but as scarce as ever locally.

Bituminous—The trade is in a very unsatisfactory condition with jobbers grumbling at the continued uncertainty of everything. They are making good profits, but at the risk of their capital if mistakes are made. If they could depend on their usual small margin of profit, many of them would accept it rather than stand for the 50c. a ton or more that they insist on now. The car movement is not improved. The trade complains bitterly, though it is a fact that the movement is very large and promises to continue so. The consumption is not falling off. If the cancelling of passenger trains takes place there will be more locomotives to keep the cars moving and there will be fewer passenger trains in the way. Then, if there is labor enough to dig the coal needed, the stress will be relieved.

The price range is about as formerly, based on about an average of \$5 net for Pittsburgh at the mines, with little variation for sizes. Prices are as follows:

Youghiogheny Gas.....	\$6.25@6.75
Pittsburgh Steam.....	6.10@6.60
Ohio No. 8.....	6.05@6.55
Bessemer.....	5.95@6.45
Allegheny Valley.....	5.85@6.35
Cambria Co. Smithing.....	6.75@7.25
Pennsylvania Smokeless.....	6.85@7.35
All Slack.....	3.80@6.30
Cannel.....	6.50@7.00

All prices quoted are per net ton, f.o.b. Buffalo.

Anthracite—The trade is still much disturbed as every consumer without a winter supply is clamoring for it. The shippers do not think there is any cause for alarm, though they are distributing the coal as evenly as they can. It is a rule of the city retailers to deliver only a load on a single order from a family, which is, of course, not satisfactory to the purchaser, who cannot be made to see that he is not being discriminated against.

The Canadian retailers are coming over here in about as great numbers as they did last winter, all claiming that they know of consumers who are out of coal. It is a situation which will last all summer, but it is to be hoped that when the actual fall trade sets in there will be much more coal in the hands of consumers than there was last fall.

Lake shipments of anthracite for the week were 93,750 net tons, of which 37,100 tons cleared for Duluth and Superior, 17,600 tons for Milwaukee, 13,500 tons for Chicago, 7500 tons for Sheboygan, 7300 tons for Fort William, 6900 tons for Menominee, 2650 tons for Hubbell and 1200 tons for Dollar Bay. Rates are still unsettled. Shipments for May were 424,700 tons and for the season, 622,495 tons, as against 561,396 tons to June 1 last season. This increase for the present season is more apparent than real, as the largest shipper at this port was without a dock most of last summer and made a great part of his shipments from Erie, Penn.

DETROIT

Steam coal supply still deficient, with prices holding at high level. Anthracite receipts light. Pooling arrangement increases Lake movement.

Bituminous—Jobbers are of the opinion that the steam coal buyers are coming to a realization of the fact that supply has not increased materially with the discontinuance of household heating plants, but on the contrary seems even less adequate than before. Prices are holding at the higher level and showing no sign of a break. Steam, lump, egg, nut, pea and slack are being quoted at \$5 at the mines, with some sales reported both above and some below that amount. Mine-run is less plentiful than a month ago and is quoted at \$4.25 to \$4.50. There is, however, little demand for that grade in the local market, except from one large consumer.

Though the urgency of demand for domestic stock from household consumers has disappeared, there is some buying by retail dealers. There is a strong inquiry for smokeless lump and egg which is quoted

about \$6.25 at the mines, though no one appears able to deliver the coal.

Anthracite—Retail dealers in Detroit find that stock which they ordered for May delivery in many cases has not reached them, while prices automatically advanced at the mines, June 1.

Lake Trade—Operation of the arrangement between railroads and coal shippers for pooling coal handled through Lake Erie ports was begun June 1. The plan provides for combining, in one cargo, coal belonging to various owners, thus releasing cars that heretofore have been held to await arrival of sufficient of the same shipper's coal to load the vessel chartered to move it. During the first two days the new system was in effect some 30 vessels were loaded, freeing cars for shipment of iron ore from unloading docks to furnaces.

CLEVELAND

Market quiet but firm. No Pocahontas coal to be had. New pooling arrangement expected to relieve car shortage.

The local market the past few days has been quiet but firm, prices remaining at same level they were one week ago, with a little stronger demand for spot shipments. Car supplies at the mines have been a little better and are expected to improve still more as soon as the Lake pooling arrangement gets to going good. It only started operations on June 1, and has not had time as yet to effect any improvement in car supplies at the mines.

Pocahontas coal has practically disappeared from this market as jobbers have been unable to secure any shipments for over three weeks.

Steps were taken by the City of Cleveland, Saturday, to secure 250,000 tons of coal for municipal plants to prevent any shortage of fuel next winter. Fifteen Cleveland coal operators and dealers met with Mayor Davis, and other city officials, and arranged to pool their supplies and furnish the coal at \$3.50 per net ton f.o.b. mines, plus 90c. a ton freight. A similar plan will be worked out to provide fuel for the city schools.

Following are the market prices per short ton, f.o.b. Cleveland:

	Three-quarter	Mine-run	Slack
No. 8	\$5.25	\$5.25	\$5.25
Cambridge	5.25	5.25	5.25
Middle District	5.25	5.25	5.25
Hocking	5.00	5.00	5.00

COLUMBUS

Demand steady and quotations firm. Lake trade now attracting the attention.

Demand for Lake tonnage is now overshadowing all other features of the coal trade in Ohio. With navigation opening later than usual and with car shortage still present, Lake shippers and dock men see a strenuous season ahead, though the pooling of Lake tonnage is expected to be quite a help towards relieving the situation. Other branches of the industry are rather quiet, although demand is good all along the line.

Steam business is rather active as requisitions on the part of large manufacturing plants are large. This is especially true of iron and steel concerns, where orders are larger than formerly. Railroads are taking a large tonnage, while bids have been asked for coal supplies for many public institutions and in many cases very few proposals have been made.

With car supply improving, reports from various Ohio fields show a larger production. This is especially true in the Hocking Valley and Pomeroy Bend districts. Eastern Ohio is still hampered by short car supply and as a result the output is about 60 per cent. of normal.

Prices on short tons, f.o.b. mines, are as follows:

	Hocking	Pomeroy	Eastern Ohio
Rescreened lump	\$4.75	\$4.75	
Inch and a quarter	4.75	4.75	\$4.75
Three-quarter inch	4.50	4.75	4.50
Nut	4.50	4.50	4.50
Egg	4.50	4.50	
Mine run	4.25	4.50	4.50
Nut, pea and slack	4.25	4.25	4.50
Coarse slack	4.25	4.25	4.50

CINCINNATI

Car and labor shortages continue to strengthen the market. Winter prices or better prevailing.

Reports from operators in the West Virginia fields indicate that the car situation has become worse, if possible, the supply falling off to virtually nothing at some mines, while few are able to secure enough cars for more than half of their output. While the demand is not heavy, there is a continued call for the steam grades, and

there is barely enough fuel available to supply this current demand, aside from the requirements of the retail trade, which is becoming anxious to store coal for delivery during the coming summer months.

The labor situation is worrying the operators considerably; this is largely due to the car shortage, as the men have for some time been restless and dissatisfied over inability to work more than half time, and are leaving the mines for other work. Enlistments in the military and naval establishments are fairly numerous, as well, and take their share of the men.

LOUISVILLE

Continued inadequate car supply and persistent demand hold prices almost stationary. Warmer weather having no apparent effect on demand.

Continuation of the inadequate car supply and difficulties in obtaining sufficient labor have served to maintain the market. An indication of an advance is noted in the bullish tone of statements of operators, while the numerous investigations in this section appear to be doing little more than apprise the public of the difficulties under which the coal trade is working. There is some hope expressed that the wide agitation of the car situation may result in some relief, although there is no business being closed on this expectation. Orders are booked conditionally and for delivery at once at the market.

Eastern Kentucky prices range around \$5 for block; \$4.75 for mine-run and \$4.50 for nut and slack, while western Kentucky is reporting sales of lump at \$2.75@3.25; mine-run at \$2.50@3; nut and slack, \$2.25@2.35, and pea and slack, \$2@2.25, all prices f.o.b. the mines.

BIRMINGHAM

Buying easier, but prices unaffected. General car situation seems slightly better, but there are still complaints from the operators. Labor conditions also causing much worry.

While inquiries are not quite so brisk in the local market as they have been, the demand for this season of the year is good, and sufficient business is being booked to care for all the free coal obtainable. Fundamental conditions affecting the production and movement of coal have undergone little, if any change, and quotations remain about the same as a week ago. Big Seam and Carbon Hill mine-run coal is quoted at \$3@3.50, with Cahaba, Black Creek and Pratt bringing \$3.75@4.25 per net ton mines, with \$4 perhaps the ruling figure for the high-grade coals.

Retailers are still endeavoring to stock up for the fall and winter season but are finding it an up-hill business. Deliveries are slow and uncertain, and dealers complain that in some instances the mines are cancelling the unshipped quotas at the end of each month. Quotations are \$4@4.50 for the low and medium grades of lump and nut, and \$5 per net ton mines for high-grade coal. Retailers are asking \$5@5.25 for Carbon Hill lump and nut, and \$5.75@6.25 for Black Creek, Cahaba and Montevallo lump and nut.

Coke

CONNELLSVILLE

Car supplies scant. Operators reserved on contracts. Prices generally higher.

Car supplies this week are scant, as has been the case for three weeks past. The scarcity is somewhat greater on the Pennsylvania than on the P. & L. E. divisions, resulting in a shade higher spot prices on the former than the latter, the market in general being \$9.50 to \$9.75 for spot.

The contract furnace coke market is now quotable at a minimum of \$8.50 and it would be difficult to find a seller at that price. A few weeks ago two or three small contracts and one larger one were made at \$8 and this set a new high level, at which it seemed doubtful at the time many buyers would take hold, but a great deal has occurred since, particularly by way of a shortage of pig iron developing, indicating that there will be demand for pig iron at phenomenal prices for an indefinite period ahead. A trifle over a week ago a contract was made at \$8.50, for 12,000 tons a month over the second half. There was another contract made for a similar tonnage at \$9.50, but this was not a regular market transaction. It was between companies with some common ownership, there was an absolute guarantee of shipment, irrespective of car supplies, and it is understood that there was also a guarantee against decline.

Foundry coke is in moderate demand, with supplies scant and prices a trifle

higher. The market is now quotable as follows: Spot furnace, \$9.50@9.75; contract, \$8.50; spot foundry, \$10@11; contract, \$9.25@10, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended May 26 at 344,625 tons, a decrease of 16,315 tons, and shipments at 332,358 tons, a decrease of 15,922 tons.

Buffalo—The trade is strong, mainly on account of the scant car supply, though the demand keeps up well and shows no sign of dropping off. Reports of local furnaces running light mean that they are short of supplies. Prices are \$12.35 for foundry, \$11.35 for furnace and \$10 for off grades and stock.

Birmingham, Ala.—Activity in the coke market is featured by a strong demand, and with the approach of July 1, when a large number of contracts expire, a lively scramble is expected, with an added number of contract buyers bidding for the tonnage released at that time. Foundry coke is still quoted at \$15 per ton to new spot customers, with contract prices ranging from \$11 to \$12.50. The shortage of furnace coke is acute, and with the blowing in of several furnaces in the near future, which have been idle for a number of years, and others being rehabilitated for operation a little later on, the situation is anything but reassuring. Old style ovens are constantly being added to the producing facilities, but it seems impossible to keep pace with the demand. There are no regular quotations on furnace coke on account of its scarcity, but it easily brings around \$8 per ton, ovens.

Middle Western

GENERAL REVIEW

Market is feverish. Probable Government regulation of coal prices, and danger of famine later in the season.

The prospects of action by the Government tending to regulate coal prices, and the agitation by the daily press for action of some kind, has had a tendency to keep the market in a feverish condition the past week. Prices have not changed except in isolated cases, and the agencies are not accepting any new business which calls for immediate shipment as they are unable to make shipments on orders now on hand due to the shortage of cars.

It is generally understood that June prices, will amount to 25c. per ton above the May circular. However, quite a bit of June coal will be invoiced on the May price since a number of operators accepted business on the basis of a stipulated price, and have run far short of filling these orders.

The anthracite market in the mid-west has changed but little, buyers complaining of non-fulfillment of orders with not much promise of shipments at later dates. Lake shipments are very slow, and arrangements are being made to substitute bituminous coal. Illinois and Indiana shippers being called upon to supply this tonnage.

CHICAGO

Demand for Indiana and Illinois coals very strong, and prices firm on all sizes. Car supply showing no signs of improvement.

The Chicago market is in a curious and complex position this week. Buying of domestic coals continues as heavy as at any time during the past winter, and in some cases it is more panicky than during last February. While strenuous efforts have been made to create storage piles no results are being obtained along this line. The unprecedented lateness of the spring has, no doubt, caused a greater demand than usual by householders. Steam business is good and prices are very firm, a slight upward tendency being noted since last report.

Southern Illinois mines are not working better than fifty per cent. of time due to shortage of cars. The Franklin County mines produced slightly in excess of 1,000,000 tons during May, and have about this amount of coal sold for June shipment. Williamson and Saline Counties have had a good demand on all sizes, and premium prices are being paid for prompt shipments.

In Central Illinois the car supply continues very poor. Prices are about the same on steam sizes as last week, but prepared coal is bringing 25c. to 50c. more than at any time since February.

Indiana mines are running about 50 per cent. of full time. Inquiries are coming from retailers in western Ohio, new territory for this field, and account of the shortage of Eastern coals there seems to be no question but what considerable tonnage will move to this new territory.

Shipments of Hocking, Pocahontas and other Eastern bituminous to Chicago are practically nil. Retailers claim they are unable to secure one-half their regular quota of these coals, and in some instances, notably Eastern Kentucky, are making no effort at all to secure shipments.

Quotations in the Chicago market are as follows, per net ton f.o.b. cars at mines:

	Spring-field	Fulton and Peoria Cos.	Clinton and Sullivan Cos.	Green and Knox Cos.	Carterville
Domestic lump.....	\$3.25@3.50	\$3.25@3.50	\$3.25@3.75	\$3.25@3.50	\$3.25@3.75
Steam lump.....	3.00@3.25	2.75@3.00	2.75@3.50	2.75@3.25	2.75@3.75
Egg.....	3.25@3.50	3.25@3.50	3.25@3.75	3.25@3.50	3.25@3.75
Nut.....	3.25@3.50	3.25@3.50	3.25@3.75	3.25@3.50	3.25@3.75
Mine-run.....	2.75@3.25	2.75@3.00	2.75@3.50	2.75@3.00	2.75@3.75
Screenings.....	2.75@3.25	2.75@3.00	2.75@3.50	2.75@3.00	2.75@3.25
	Williamson and Franklin Cos.	Saline and Harrisburg	Poca. and W. Va. Smokeless	Penna. Smokeless	Eastern Kentucky
Lump.....	\$3.25@3.75	\$3.25@4.00	\$5.75@6.25	\$5.75@6.25	\$5.00@5.75
Egg.....	3.25@3.75	3.25@4.00	5.75@6.25	5.75@6.25	5.00@5.75
Nut.....	3.25@3.75	3.25@4.00			5.00@5.75
No. 1 nut.....	3.25@3.75	3.25@4.00			
No. 2 nut.....	3.25@3.75	3.25@3.75			
No. 3 nut.....	3.00@3.50	3.25@3.75			
No. 1 washed.....	3.25@3.75				
No. 2 washed.....	3.25@3.75				
Mine-run.....	2.75@3.50	2.75@3.50	5.00@6.00	5.25@6.00	4.75@5.50
Screenings.....	2.75@3.75	2.75@3.50			4.75@5.50

Hocking Lump \$4.25@4.75. Splint Lump \$4.25@4.75.

Grundy, LaSalle, Nureau & Will counties:

Lump-Furnace and No. 1 Nut.....	\$3.25@3.50
Washed nut.....	3.25@3.75
Screenings—washed.....	3.00@3.50
Screenings—raw.....	2.75@3.25
Steam lump and mine-run.....	2.75@3.25

ST. LOUIS

No demand for Williamson and Franklin County makes the market quiet, although none is offered. Cheaper coals easing up some, with fairly good demand. Car supply important factor. Embargoes raised. General conditions easier.

There has been an easing up in the local situation, especially in the demand for high grade. Locally there is nothing moving in Williamson and Franklin Counties, but the country is buying some. The best demand seems to be from the South and on the Iron Mountain system. This territory is badly in need of fuel, but cannot afford to pay the price that the northern markets are paying.

Fairly good tonnage of high grade is moving to the Northwestern markets through this gateway, but there has been an easier tone everywhere. Very little free coal is offered and nothing to indicate that there will be much during the coming month. Steam demand is good on everything excepting screenings, which are easing up some.

In the Mt. Olive and Staunton fields everything is firm, the price of \$2.25 to St. Louis trade being maintained and everything offered being accepted. Country prices are from \$3 to \$3.50, depending upon the class of equipment and the tonnage demanded. Equipment for the country in this field is somewhat scarce.

The local retail situation is unchanged except that Mt. Olive and Standard dropped 25c. per ton retail. A few local wagonload steam contracts are reported this week for Standard lump coal on some tonnages at about \$2.87½. These were made by retail companies having their own mine, and indicate a price far below the market for delivery coal.

The prevailing market is, per net ton, f.o.b. mines:

	Williamson and Franklin Co.	Mt. Olive and Staunton	Standard
6-in. lump.....	\$3.50	\$2.25@3.00	\$2.00@2.25
3x6-in. egg.....	3.50	2.25@3.00	2.00@2.25
2x3-in. nut.....	3.50	2.25@3.00	2.00@2.25
No. 2 nut.....	3.50		
No. 3 nut.....	3.50		
No. 4 nut.....	3.00		
No. 5 nut.....	2.50		
2-in. screen.....	2.75	2.25	1.75
2-in. lump.....			1.75@2.00
3-in. lump.....		2.25@3.00	
Steam egg.....	3.50	2.25	1.75@2.00
Mine run.....	3.25	2.25	1.75
Washed			
No. 1.....	3.75		
No. 2.....	3.50		
No. 3.....	3.50		
No. 4.....	3.00		
No. 5.....	2.50		

Rate on Williamson and Franklin Counties is 72½c. Rate on other fields is 57½c.

All the railroads in this field, including the L. & N., raised embargoes, and coal is going to the country and the north in good volume. Chicago is buying heavily in this field at times. Coal for some outside territories is bringing as much as \$2.25 for 6-in. and better than \$2 for 2-in.

In the Standard field coal for St. Louis proper is down as low as \$1.75 for 2-in.

Receipts of coal thus far aggregate 552,129 tons, not including consignments by rail and car ferry. Of this amount, 85,257 tons were anthracite and 466,872 tons bituminous. These figures show a falling off of something like 300,000 tons from the record of last year up to this time.

Prices of anthracite have advanced 10c. per ton and all soft coal except Illinois screenings 50c. per ton. Egg and nut anthracite now retail at \$9.20@9.45. Coke is held at \$8.90. Coke producers state that the price will be no lower, but coal men are of the opinion that if transportation facilities improve there will be some relief from prevailing high prices.

Northwestern Markets

SEATTLE

All grades of coal expected to be scarce next winter, with prices considerably higher. Business on a cash basis. No summer reduction.

Coal operators of Washington are of the opinion that all grades of coal are going to be scarce next winter, especially steam coal, because of the demands of railroads and steamships which have increased their orders more than 50% during the last year. Congestion of the railroads is one reason for the steady prices of coal this summer and dealers expect no reductions will be made. Enormous quantities of coal are now being consumed by the shipbuilding plants of the Puget Sound district, indication of the increase being shown by the receipts in Seattle which now amount to \$8,000,000 per year as compared to \$5,000,000 last year.

Dealers have placed the retail coal business in Seattle, Bellingham, Everett and Spokane and other cities on a cash basis commencing June 1. Many of the coal mining companies of the state have been running paid advertisements in the daily newspapers to the effect that it is hardly conceivable that coal, during the next twelve months, will be lower than it is at the present time, and it is quite probable that an advance will be made to the wholesaler.

The railroads are urging early buying and state positively that coal will not be hauled after Aug. 1 under any circumstance, and this coupled with the fact that storage yards are now depleted and could not be filled under the most favorable circumstances before that date makes the prospect of very much higher prices this winter almost a certainty.

A contract at Everett, Wash., was recently placed for \$6.25 per ton for 190 tons of Nanaimo Wellington lump and \$6.65 per ton for 110 tons of Carbonado lump.

Orders will be placed the middle of June by Seattle for several hundred tons of coal for July and September delivery and it is expected that prices will range from \$1 to \$1.50 per ton more than last year.

Foreign Markets

GREAT BRITAIN

May 17—Prompt requirements having been met, prices have eased to some extent and coal is now more plentiful.

Best Welsh steam.....	Nominal
Best seconds.....	Nominal
Seconds.....	\$6.96@7.20
Best dry coals.....	6.00@6.24
Best Monmouthshires.....	6.72@6.96
Seconds.....	6.24@6.48
Best Cardiff smalls.....	4.56@4.80
Cargo smalls.....	4.32@4.56

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport, both net, exclusive of wharfage.

Freights—Tonnage still continues to be scarce, and there is no abatement in rates of freight. The tendency is still upward, although in some instances directed steamers have been secured at reductions in last rates paid.

Gibraltar.....	\$21.00	Port Said.....	\$28.80
Marseilles.....	21.54	Las Palmas.....	18.00
Genoa.....	24.30	St. Vincent.....	19.20
Naples.....	23.58	River Plate.....	26.40
Alexandria.....	28.80		

British Exports—The belated official returns showing the exports of coal, coke and manufactured fuel during March and for the first quarter of the year afford fresh evidence of the greatly reduced scale upon which this branch of the British foreign trade is now being conducted. The tonnage of all three exported during the third month and the first quarter of 1915, 1916, and of this year was as follows:

	1915	1916	1917
March	4,143,756	3,281,793	3,025,442
First three months.....	11,698,248	9,975,276	9,416,553

and up to \$2 for 6-in., with screenings about the price of 2-in. The screening market is soft, whereas the demand for the larger sizes is good.

The market is not a strenuous one, and indications are that the next few weeks will see an easier tone with a demand just about equal to the supply. The railroads are still taking a heavy tonnage from this as well as other fields, furnishing their own equipment.

No contracts of any kind are being entertained. The car supply in all fields is a trifle better than two days per week on each road.

There has been more anthracite moved in the past week than for some time past, while the tonnage of Eastern smokeless fell off as did the tonnage of Arkansas smokeless and semi-anthracite.

A little Indiana coal is moving in and some from Kentucky of the higher grades, as well as some from Oklahoma.

MILWAUKEE

Plans under way for controlling the distribution of coal and shipments via the Lakes. Passenger train service to be limited. Lake shipments behind last season.

Interest in the coal situation has shifted from the stress occasioned by the present unreasonable clamor for fuel to the greater problem of providing ways for securing adequate supplies in the future.

Plans for the establishment of an agency to control the distribution of coal and other fuel products in this territory next winter, in event of emergency, are now being furthered by the Milwaukee County Council of Defense. An attempt will also be made by Gov. E. L. Philipp and Senator Paul Huston to bring about an early movement of anthracite to the Northwest, in which movement the Councils of Defense of several of the Western States will be asked to join. It is figured that 90 per cent. of the coal mined in the East is used to supply that section, and for that reason it will be urged that the first output of the mines be sent to the Northwest.

About 18,000,000 tons of coal are needed to supply the needs of the Northwestern States, according to an estimate submitted by E. A. Uhrig, president of the Milwaukee-Western Fuel Co. Of this amount 15,000,000 tons is bituminous and the balance anthracite. The estimate does not include the territory covered by Illinois and Indiana mines. Milwaukee's portion of the coal supply runs close to 6,000,000 tons.

The crux of the problem is how to transport this vast amount of coal in the shortest possible time. Appeals will be made for more adequate rail service from the mines to Lake ports, and pressure will be brought to bear upon Lake transportation lines in an endeavor to increase the amount of coal-carrying tonnage. With iron ore and grain freights ruling high, owners are tempted to send their boats up the Lakes without cargo rather than accept coal.

Attention will also be given to the matter of economy in the consumption of fuel. Mayor D. W. Hoan has asked consumers to refrain from buying more coal than they actually need. This is one of the evils of the present panicky rush for coal. President A. J. Earling, of the Chicago, Milwaukee & St. Paul Ry., says his company has mapped out plans to cut down fuel requirements by reducing the number of passenger trains.